NBCI Habitat Monitoring: Conducting Habitat Surveys

Training Workshop at Manassas Battlefield

Kurtis Cecil, NorthWest Arkansas Community College

NBCI™
National Bobwhite Conservation Initiative
. . . the unified strategy to restore wild quail
www.bringbackbobwhites.org

National Bobwhite Technical Committee

Introduction

- Workshop Facilitators:
  - Kurtis Cecil, Northwest Arkansas Community College
  - Jordan Spaak & Nolan Moore, National Park Service
  - Jay Howell & Marc Puckett, Virginia Dept. of Game and Inland Fisheries
  - Assistance from many others!
  - Thanks to John Morgan, Ken Duren and Tom Dailey for use of their material.


PEA RIDGE
NATIONAL MILITARY PARK
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE


5-10
WALTON'S

Primary Learning Objectives

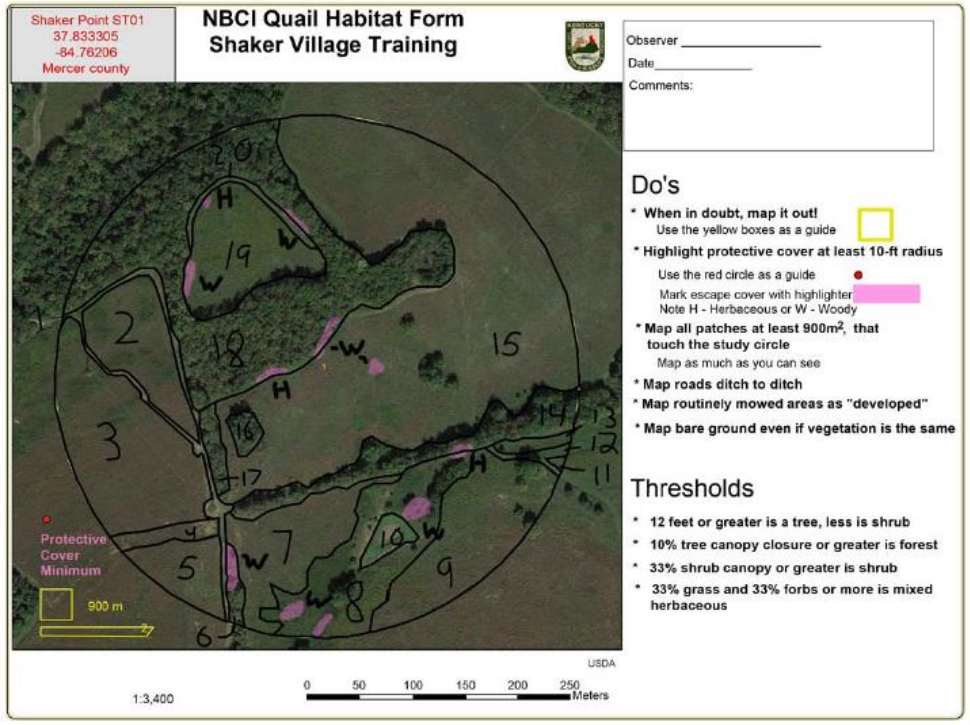
- Be able to conduct NBCI habitat surveys!
- Know & Understand:
  - the documents / tools needed to conduct habitat surveys
  - habitat characteristics, concepts, terms and protocol in the NBCI Habitat Monitoring Manual
  - types of questions/issues you will encounter
- Practice in the field:
    - identifying/differentiating habitat features used to collect field data
    - making the visual measurements / judgements necessary

Secondary Learning Objectives

- Be familiar with:
  - Purpose & content of the NBCI Coordinated Implementation Program (CIP)
  - How NBCI habitat monitoring fits in with the CIP's different components
  - Time management/logistical planning considerations
  - Some helpful field tips from experience

<u>Training goal:</u> enable personnel to collect accurate field data on the forms below.

Data sheet 1: “field map”



Data sheet 2: Observer “patch data sheet”

Point ID:	Date:	Observer:	NBCI CIP Habitat Monitoring Datasheet										
			Patch Number:										
Is this developed land or non-habitat?													
Crop fields													
Crop Type													
What % of field has standing crop residue in spring?													
Perrenial Cover													
What is the % canopy of vegetation > 12ft. tall?													
Sum = 100% of canopy	What % of the canopy are deciduous trees?												
	What % of the canopy are coniferous trees?												
What is the % of shrub cover in the understory?													
What % of the shrub cover has high stems densities near the ground?													
What is the % grass cover in the understory?													
What is the % forb cover in the understory?													
What % of the forb cover can act as protective cover?													
How many forb species are present?													
What is the % bareground including underneath vegetation?													
Is the herbaceous vegetation height > 8 in for ≥ 50% of the year?													
Do you think this patch is quail habitat?													

NOTES:

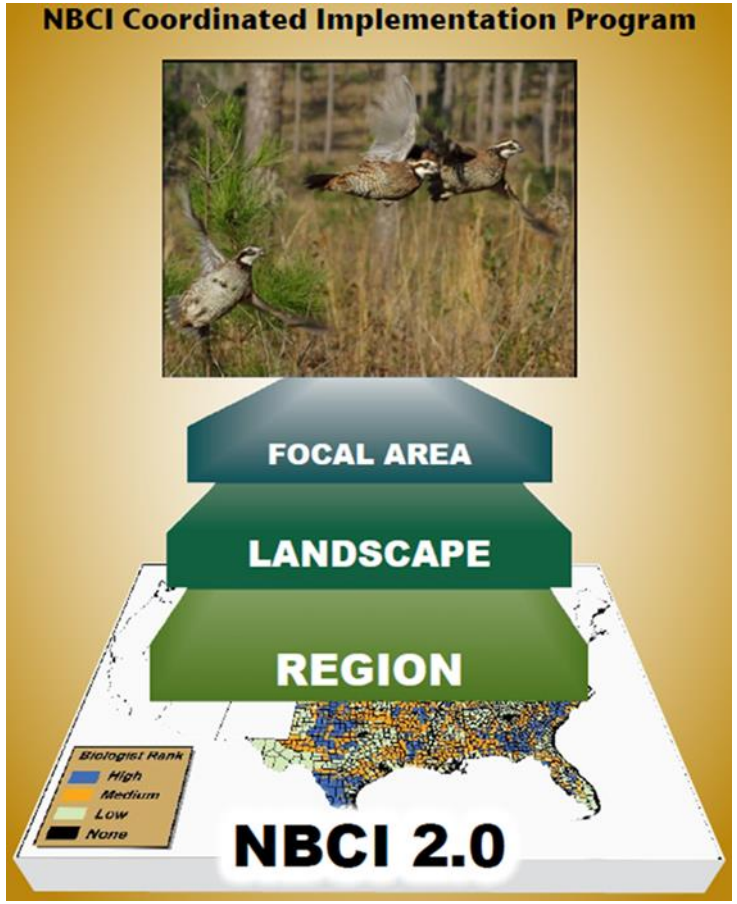
Agenda

- Day 1 (afternoon)
  - Opening comments from Agencies
  - Overview of the NBCI CIP
  - Habitat key characteristics
  - Tactical planning/prep before heading out to survey a point
  - Habitat survey protocol
  - Photo documentation guidance
  - Data collection/recording methods
  - Strategic Planning & time management

Agenda, Day 2

- Meet in class, review plan and objectives for the day
  - Form groups, proceed to field, survey features at three different monitoring locations
- Break for lunch, after lunch
  - Answer questions from morning session
  - Proceed to field to survey two monitoring points
- Wrap-up session, 3p-4pm
  - Compare/discuss assessments from groups

Section 1: Coordinated Implementation Program (CIP) Overview



Coordinated Implementation Program “CIP”

- Framework for implementing the NBCI – National Bobwhite Conservation Initiative
- Restoration roadmap for state agencies/partners
  - “how to” develop a plan, implement plan, measure results, learn
- Tiered approach (focal area, landscape, region)
- Includes Methods for Monitoring progress/success

The CIP background

- 20 years of work, many professionals; range-wide restoration effort
- Shrinks the restoration target (to thousands of acres from 10's of thousands or millions of acres)
- Improves chances of success in the short run
  - demonstrating bird populations respond to management in focal areas
- Expected results will prove: *habitat is the primary need for bobwhite restoration*

CIP background (con't.)

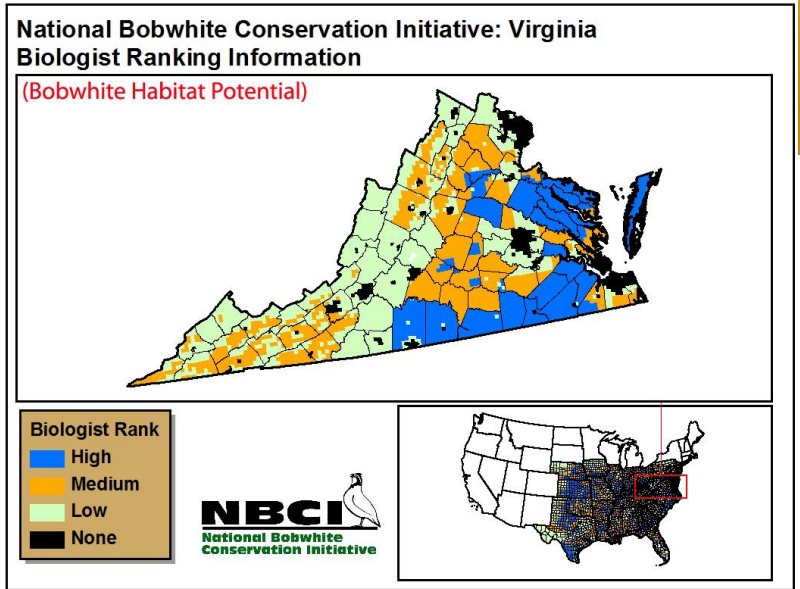
- Collaborative effort meant to reduce costs for all partners
- Simplifies the effort for states to implement a bobwhite restoration initiative
- Creates specific goals and analysis benchmarks

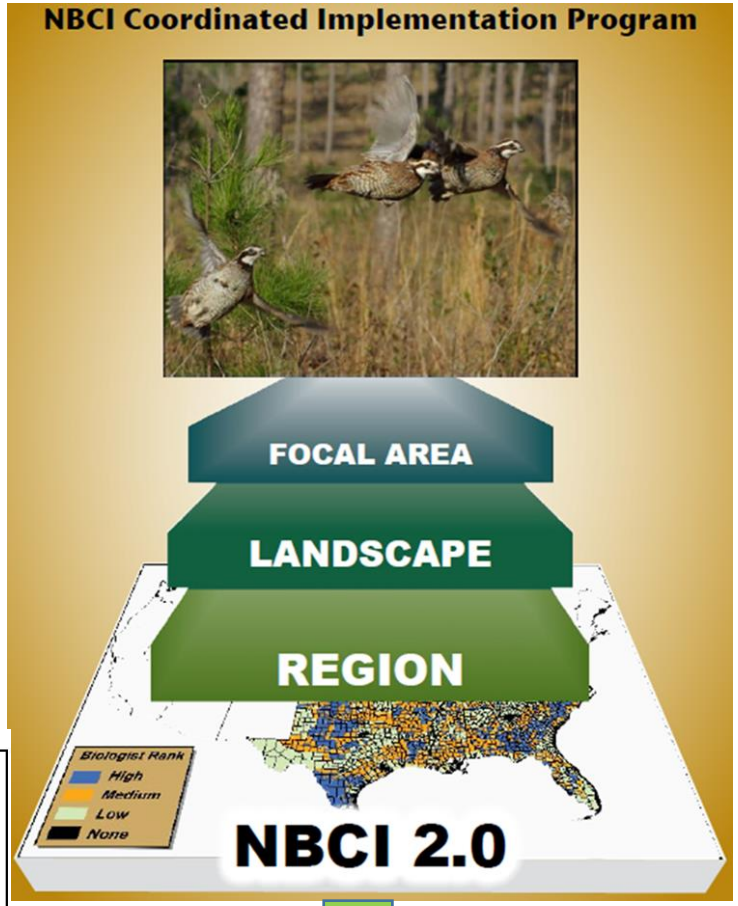
The CIP will benefit more than just bobwhites

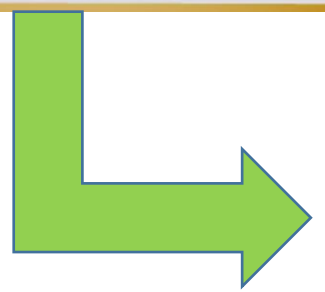
- other grass-forb-shrub wildlife (many bird species)
- and habitats of conservation concern
- water quality, pollinators, soil, and air
- *Leopold's Land Ethic*

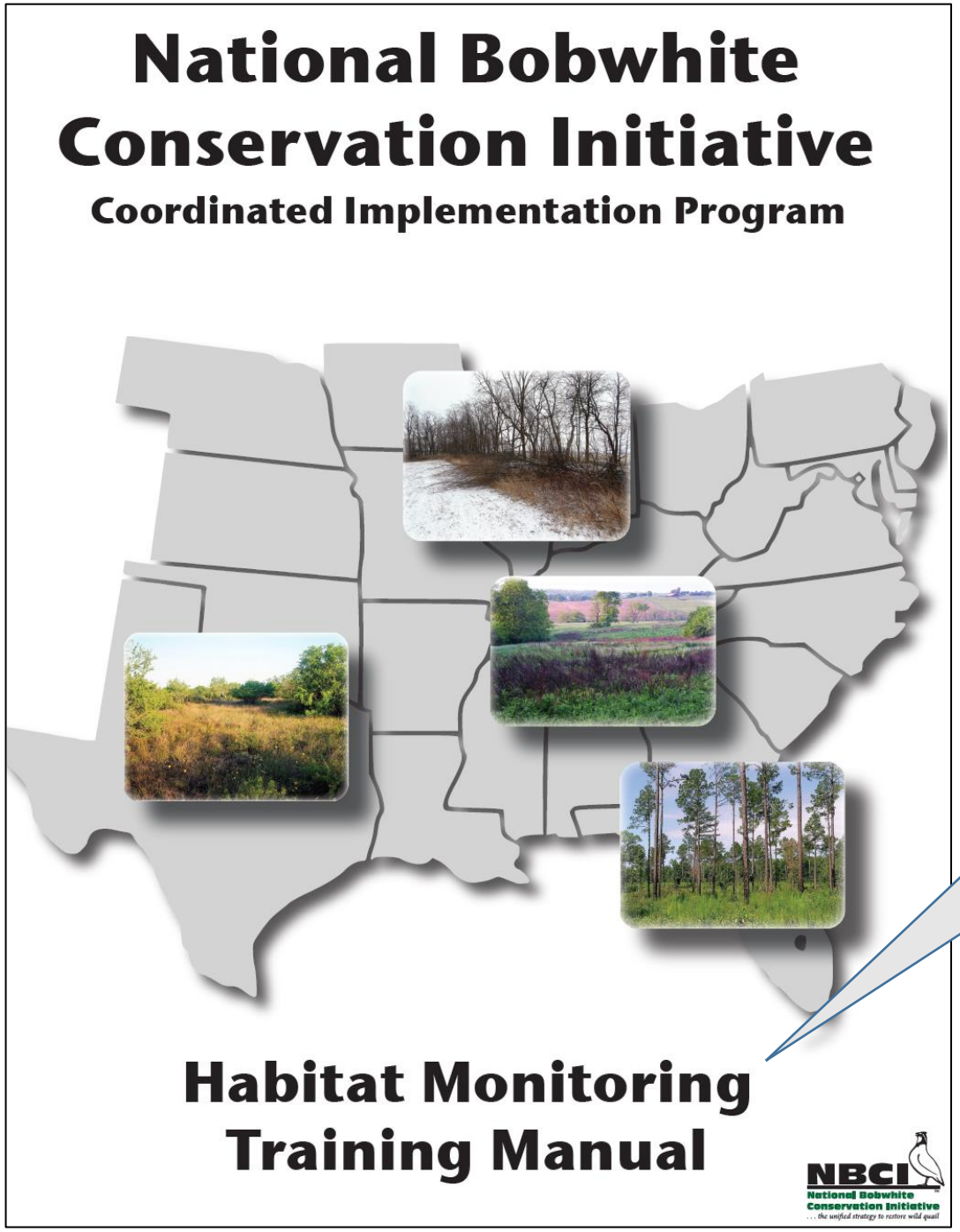
Photo credit MO DOC

National Bobwhite Conservation Initiative:
A Range-wide Plan for Recovering Bobwhites









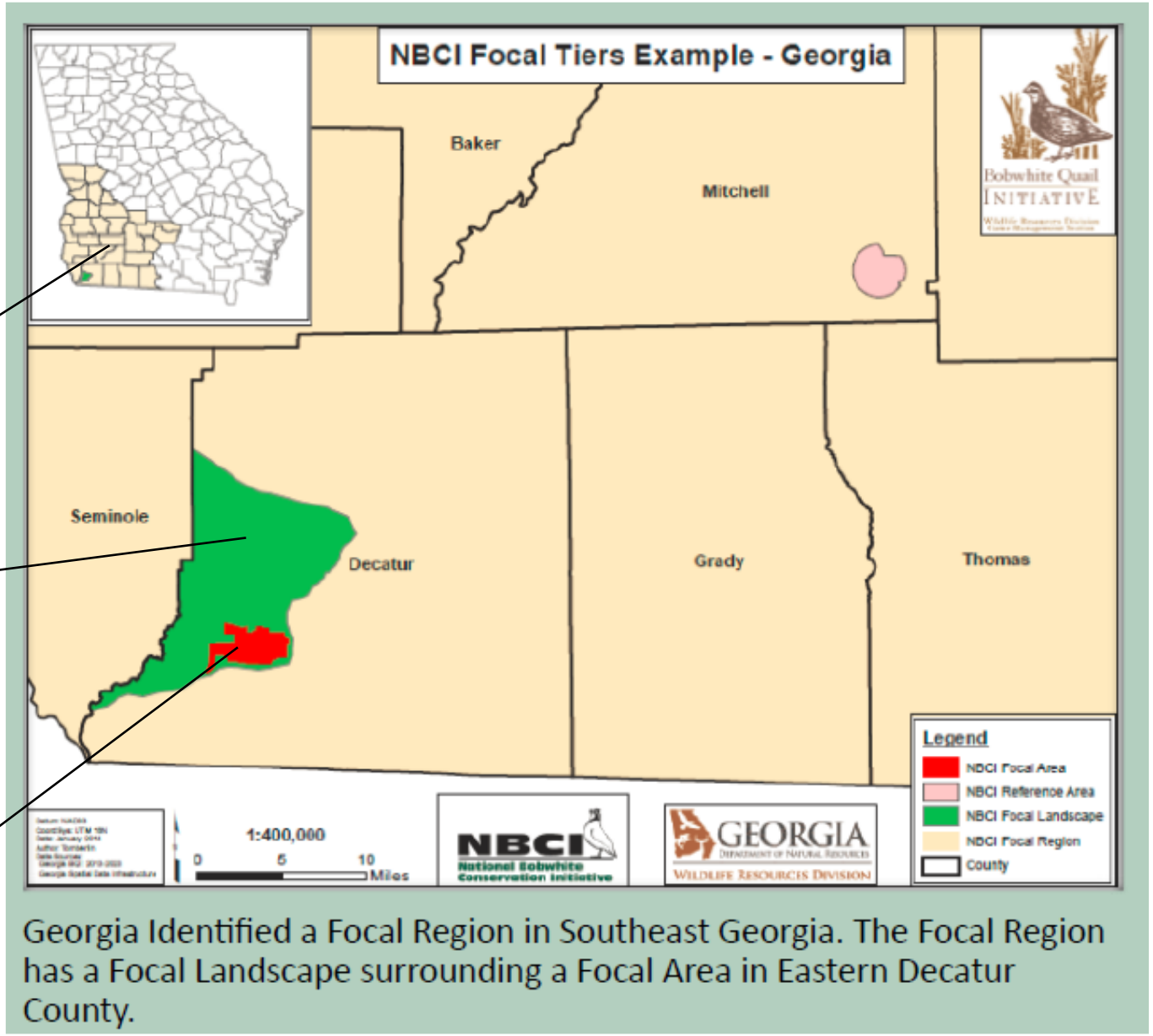
- Habitat Monitoring = conducting habitat surveys at NBCI Focal Areas
- That's our workshop focus!

CIP – Tiered Approach

Focal *region*

Focal *landscape*

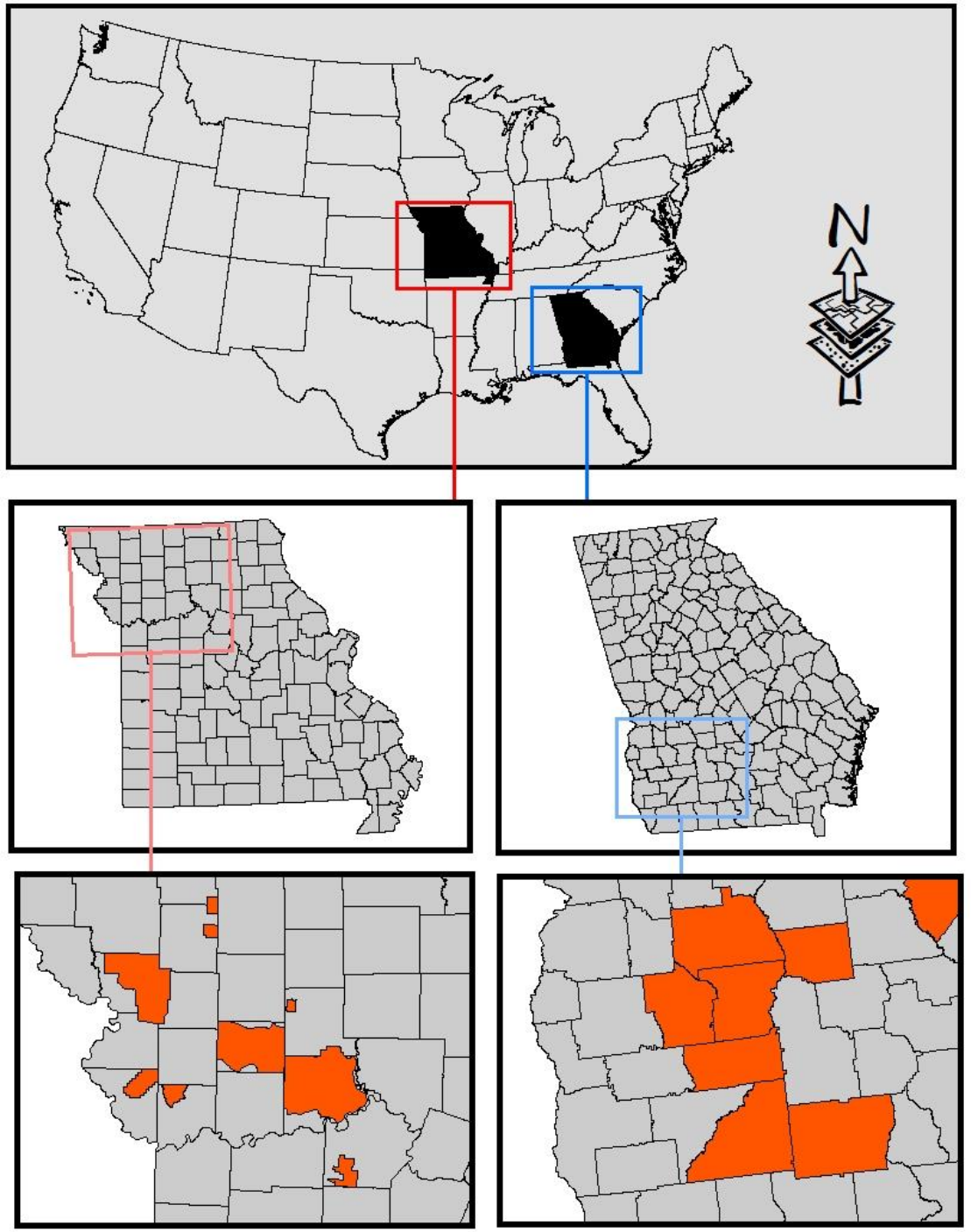
Focal *area* *#1 priority!*



Georgia Identified a Focal Region in Southeast Georgia. The Focal Region has a Focal Landscape surrounding a Focal Area in Eastern Decatur County.

CIP includes:

- Guidance on focal area planning / design
- Monitoring protocols:
  - Habitat monitoring
  - Habitat *management* monitoring
  - Bird population monitoring, spring & fall, focal & reference areas. *Be familiar with these before starting your call counts!*
  - Harvest monitoring
  - Weather, domestic birds



"The challenge:" Design a system to survey (and later analyze) habit across many ecotypes.

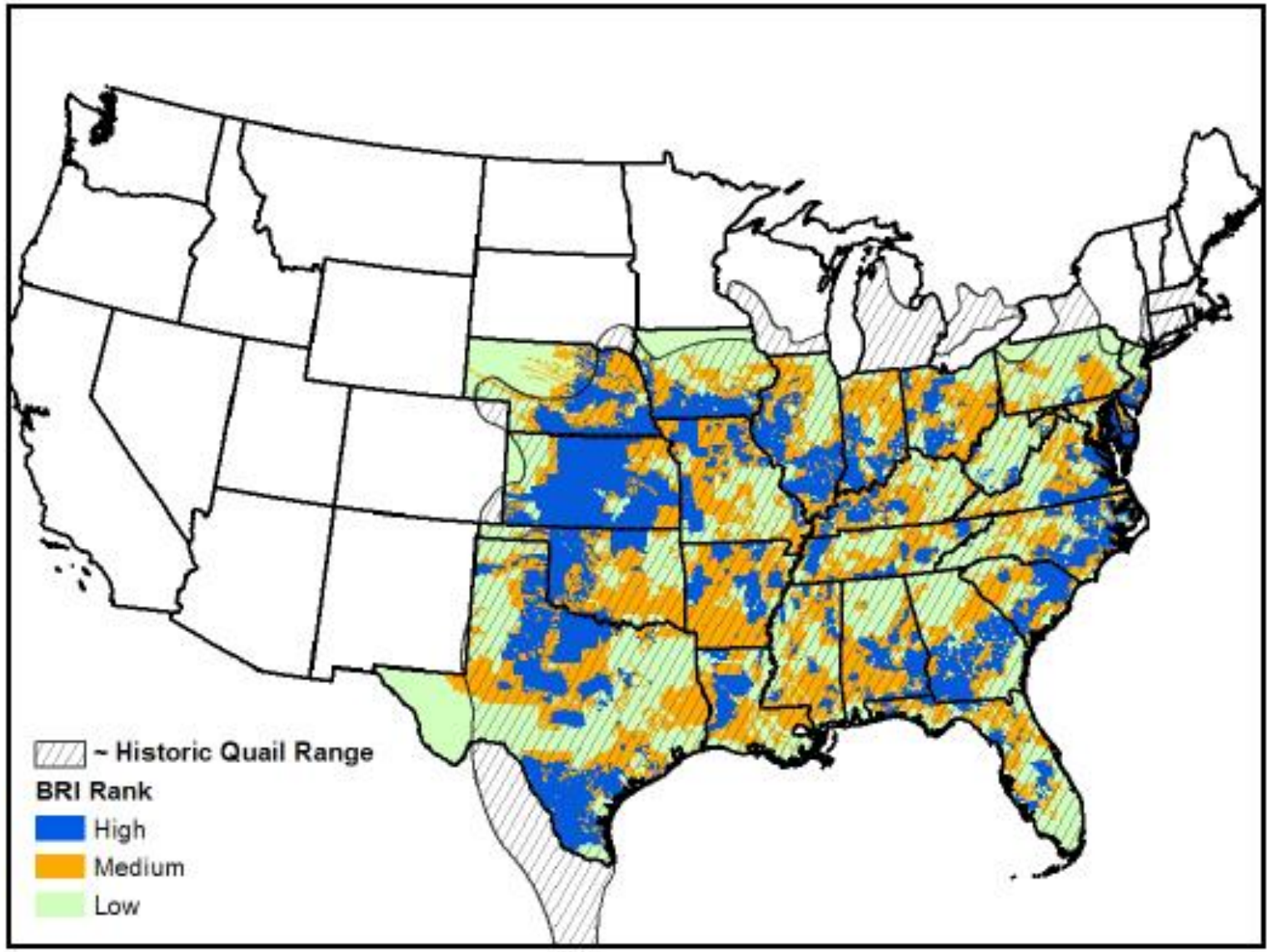
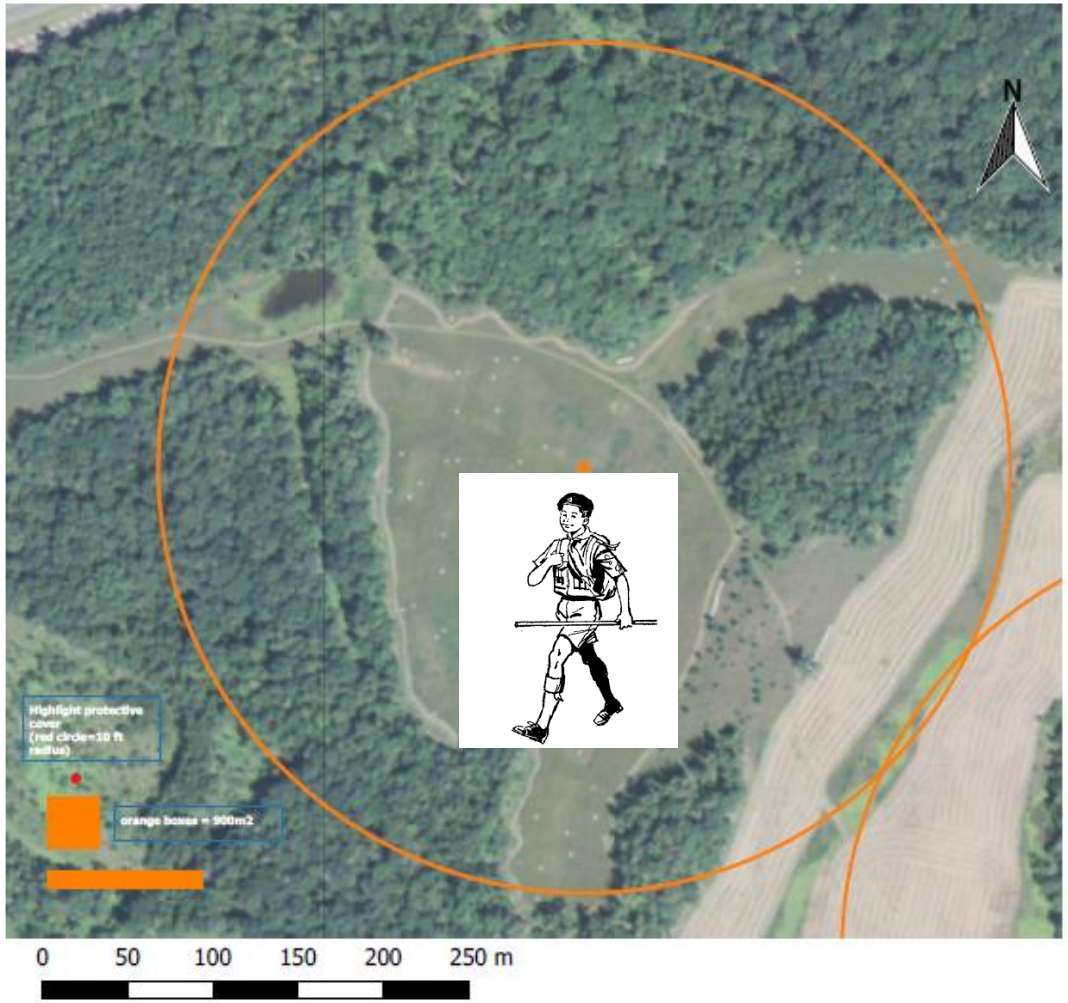


Figure 8: Biologist Ranking Information layer for all states combined overlaid with the approximate historic northern bobwhite quail range.

Habitat Monitoring (CIP p16):

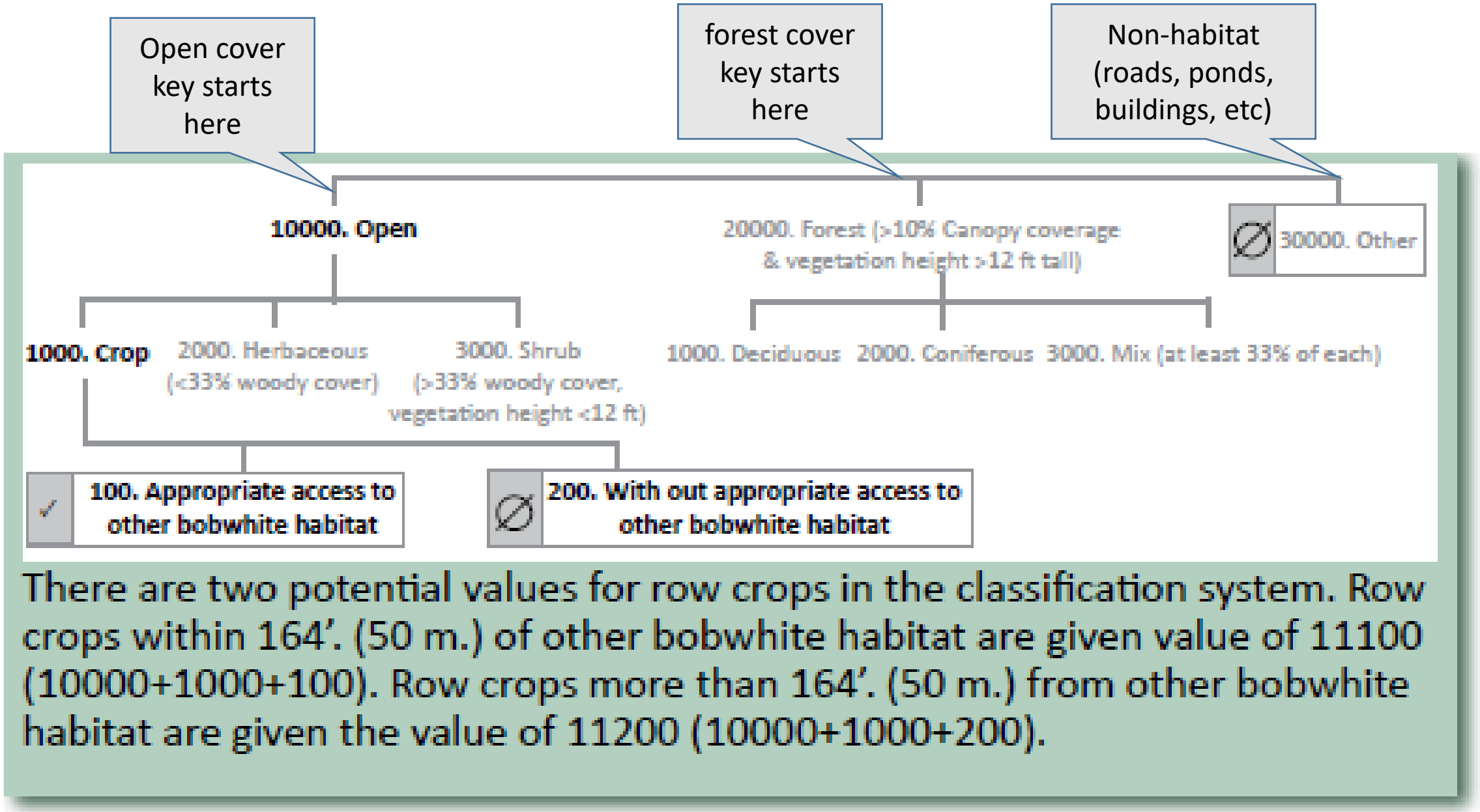
- Habitat survey frequencies:
  - Best – Annual Survey
  - Good – Survey every other year
  - Minimum – Survey at years 1,5,10

- Options for habitat determinations:
  - Gold – observer will verify habitat classification by walking the areas – Best!
  - Silver – observer will not walk the area – “roadside” survey

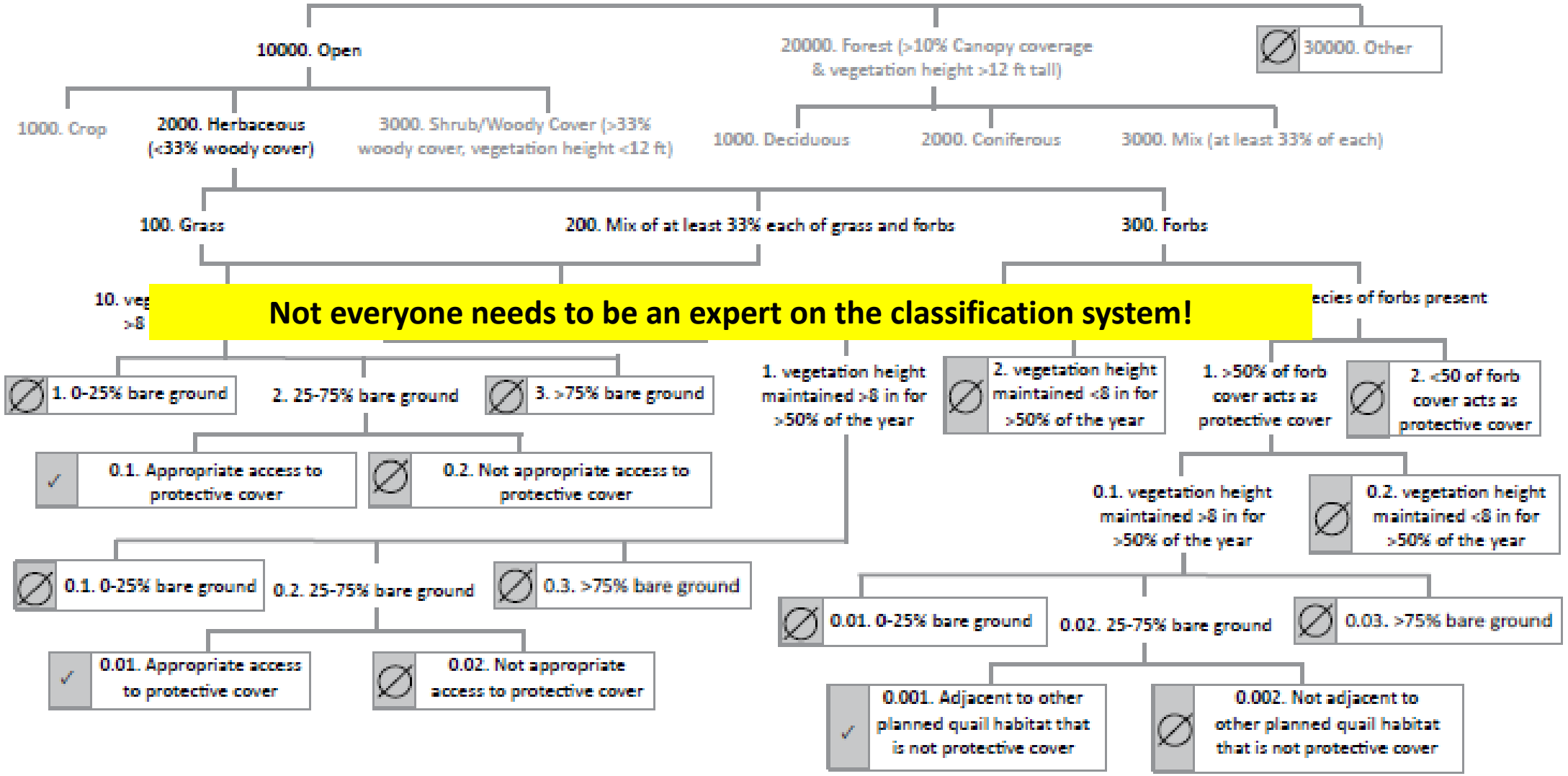


CIP – *one more important thing!* **Appendix A**

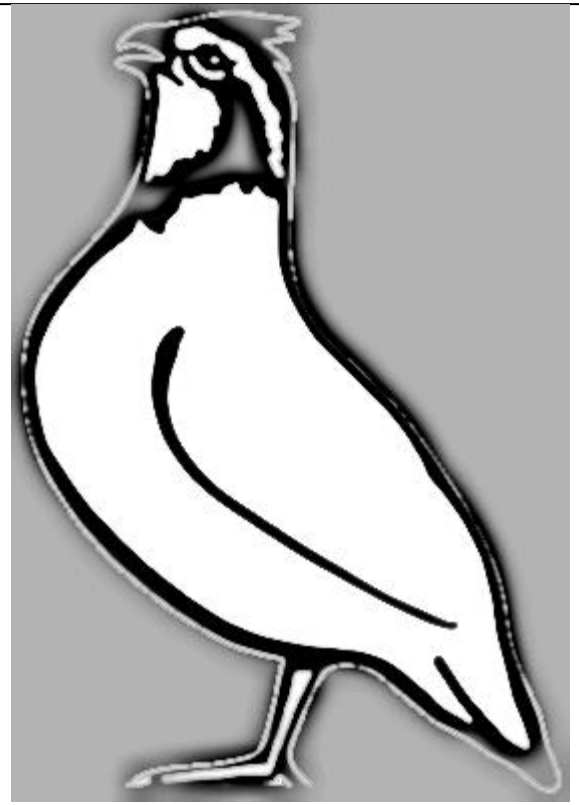
- NBCI Focal Area "**Habitat Classification System"**
  - a *polytomous* key
  - Used to determine if the "patch" is "quail habitat"
  - Results in a numerical value for each patch in the NBCI database (for research & management)



There are two potential values for row crops in the classification system. Row crops within 164'. (50 m.) of other bobwhite habitat are given value of 11100 (10000+1000+100). Row crops more than 164'. (50 m.) from other bobwhite habitat are given the value of 11200 (10000+1000+200).


10000. Open
20000. Forest (>10% Canopy coverage & vegetation height >12 ft tall)
30000. Other
1000. Crop
2000. Herbaceous (<33% woody cover)
3000. Shrub/Woody Cover (>33% woody cover, vegetation height <12 ft)
1000. Deciduous
2000. Coniferous
3000. Mix (at least 33% of each)
100. Grass
200. Mix of at least 33% each of grass and forbs
300. Forbs
Not everyone needs to be an expert on the classification system!
1. 0-25% bare ground
2. 25-75% bare ground
3. >75% bare ground
0.1. Appropriate access to protective cover
0.2. Not appropriate access to protective cover
1. vegetation height maintained >8 in for >50% of the year
2. vegetation height maintained <8 in for >50% of the year
0.1. 0-25% bare ground
0.2. 25-75% bare ground
0.3. >75% bare ground
0.01. Appropriate access to protective cover
0.02. Not appropriate access to protective cover
1. >50% of forb cover acts as protective cover
2. <50 of forb cover acts as protective cover
0.1. vegetation height maintained >8 in for >50% of the year
0.2. vegetation height maintained <8 in for >50% of the year
0.01. 0-25% bare ground
0.02. 25-75% bare ground
0.03. >75% bare ground
0.001. Adjacent to other planned quail habitat that is not protective cover
0.002. Not adjacent to other planned quail habitat that is not protective cover

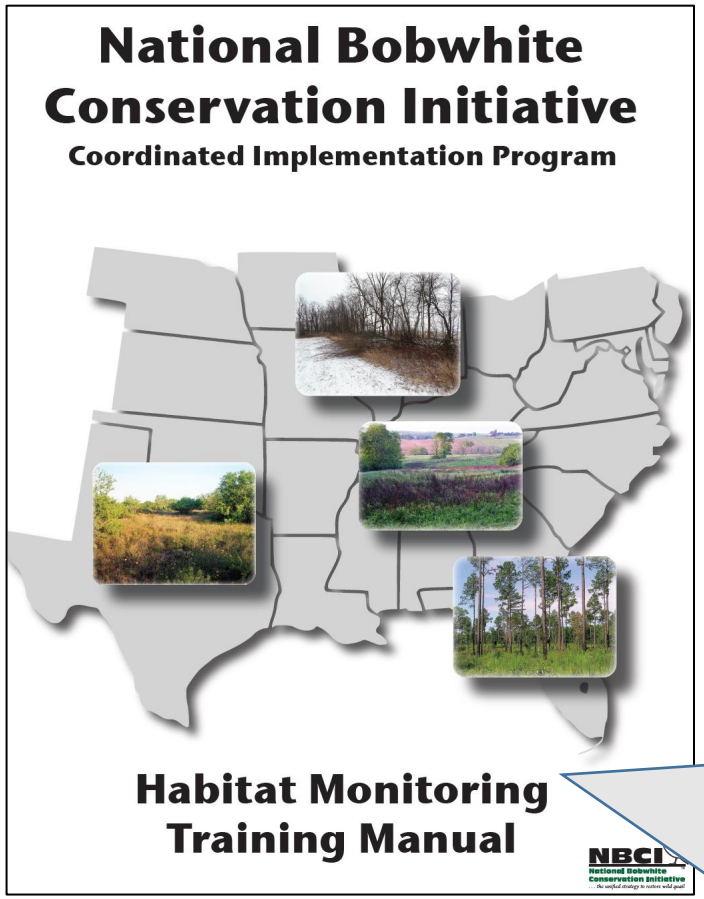
Questions on the “CIP”?



QuailCount.org

the technical information and data repository for
THE NATIONAL BOBWHITE CONSERVATION INITIATIVE

Section 2: Key habitat characteristics and habitat survey protocol



- Habitat Monitoring = conducting habitat surveys
- When? At 1, 5, and 10 years (minimum)
- between average last frost and first frost (growing season)**
- Where? At every bird monitoring point at NBCI Focal Areas and Reference Areas (within 250m radius)
- Who? Trained field staff
  - Survey is designed so that *trained* seasonal staff, can do it

Important Characteristics of Quail Habitat
Training Manual, pages 4&5

- NBCI habitat surveys
  - Based on habitat structure,
  - *Not* defined by species composition
    - So framework can be applied range-wide
    - not necessary to identify/record plant species

Primarily:

Bare ground vs. “cover”

Open vs. forest cover

Protective vs. regular cover

Herbaceous vs. woody

Canopy vs understory

Grass vs. forb

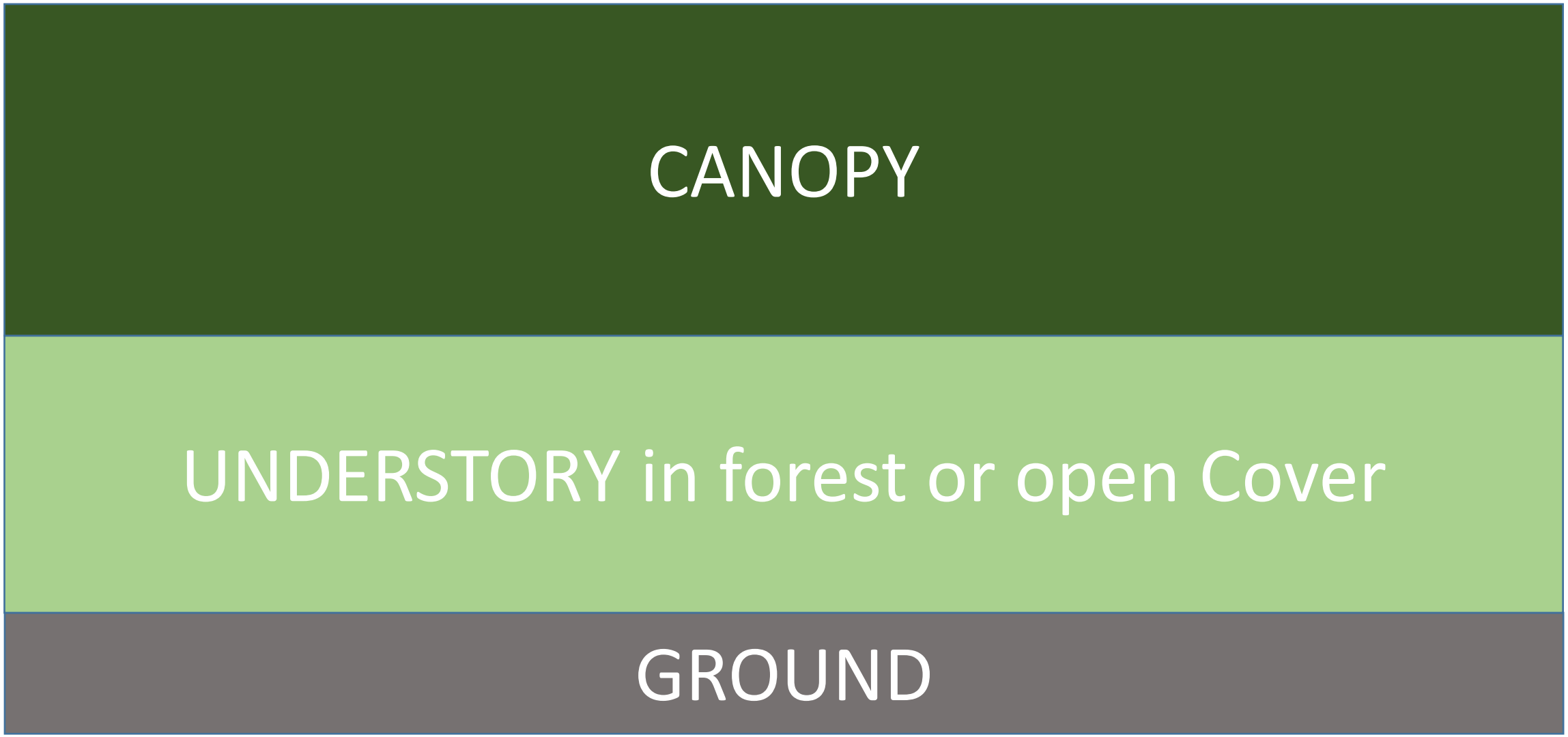
Shrub vs. tree

Conifer vs. deciduous

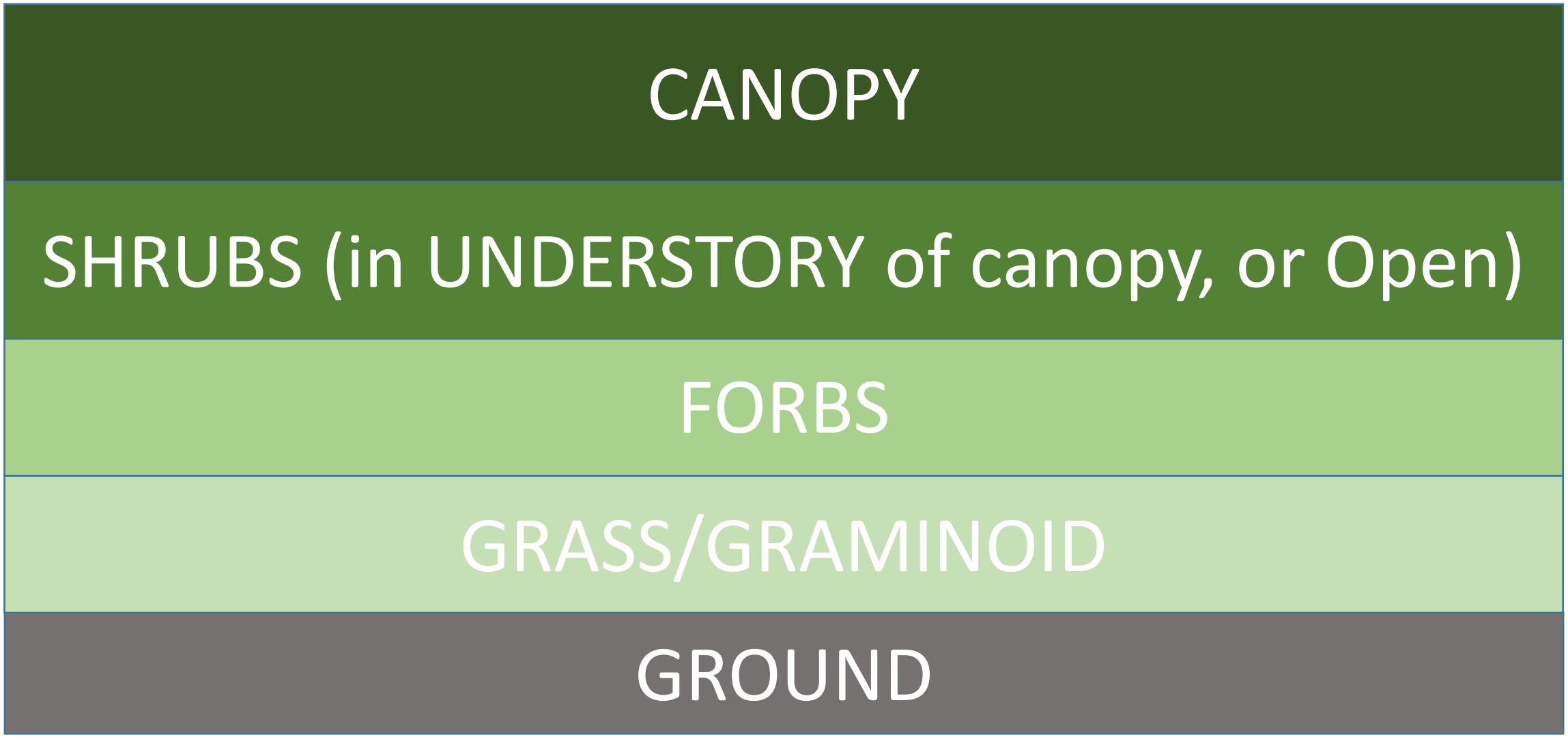
Cropland

“Developed” non-habitat

Key concept* For this survey, habitat structure = ***layers***



Layers


CANOPY
SHRUBS (in UNDERSTORY of canopy, or Open)
FORBS
GRASS/GRAMINOID
GROUND

“Quail habitat” (per NBCI classification system) must have:

- Bare ground
  - 25%-75% bare ground

- Protective cover
  - Must be within 50 meters (55 yards, 164 ft) of protective cover to be quail habitat (“softball throw away”)

https://www.youtube.com/watch?v=238PRCbHR5A
TAMU Extension “Softball habitat eval.”

Bare ground

- Exposed soil
  - Even under vegetation, without too much thatch
  - Necessary for quail chicks to travel
  - Can be difficult to estimate in assessments

Videos: Ben Robinson “Habitat Characteristics, Bare Ground”, Kentucky https://www.quailcount.org/monitoring/habitat.html

Rolling Plains, TAMU, Disking for Quail Habitat in the Rolling Plains of Texas, Start at 3:05 https://www.youtube.com/watch?v=RQzmvhQBYZU

Bare ground

- Field tips:
- Bring a stick or pole to look under vegetation when estimating bare ground
- If it is bare ground, you should be able to *easily* roll or push a golf ball through it!

Quail chicks need bare ground to move around

Rank fescue – 0% bare ground

Adequate bare ground in-between native grass clumps


Adequate bare ground among forbs

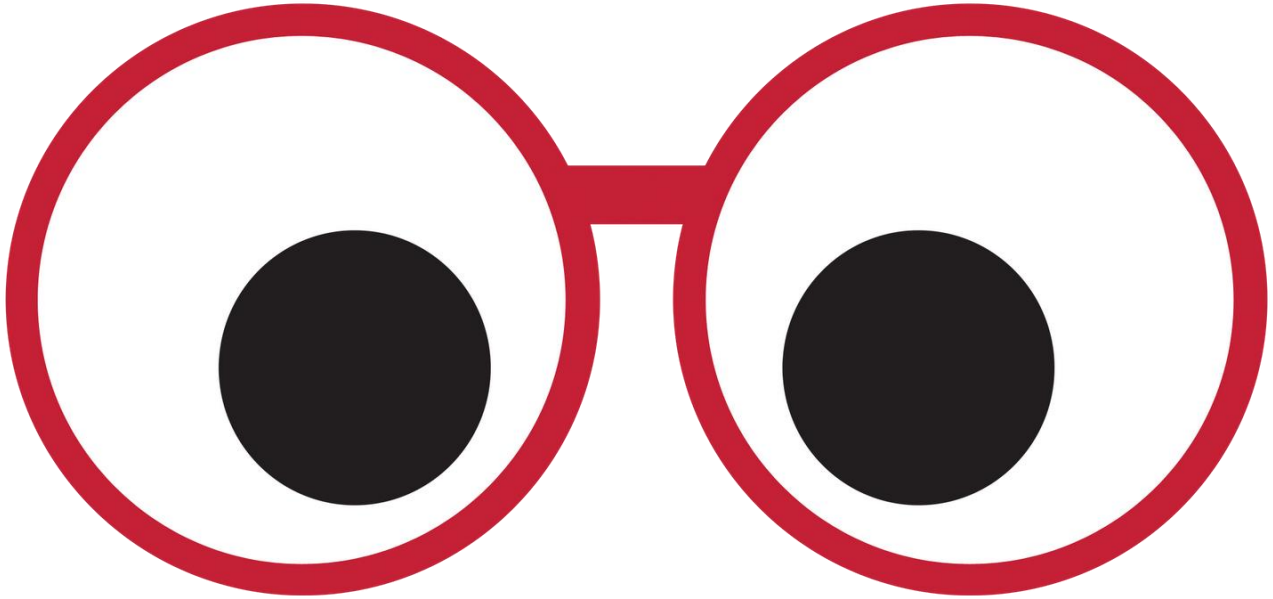
Adequate bare ground

Adequate bare ground

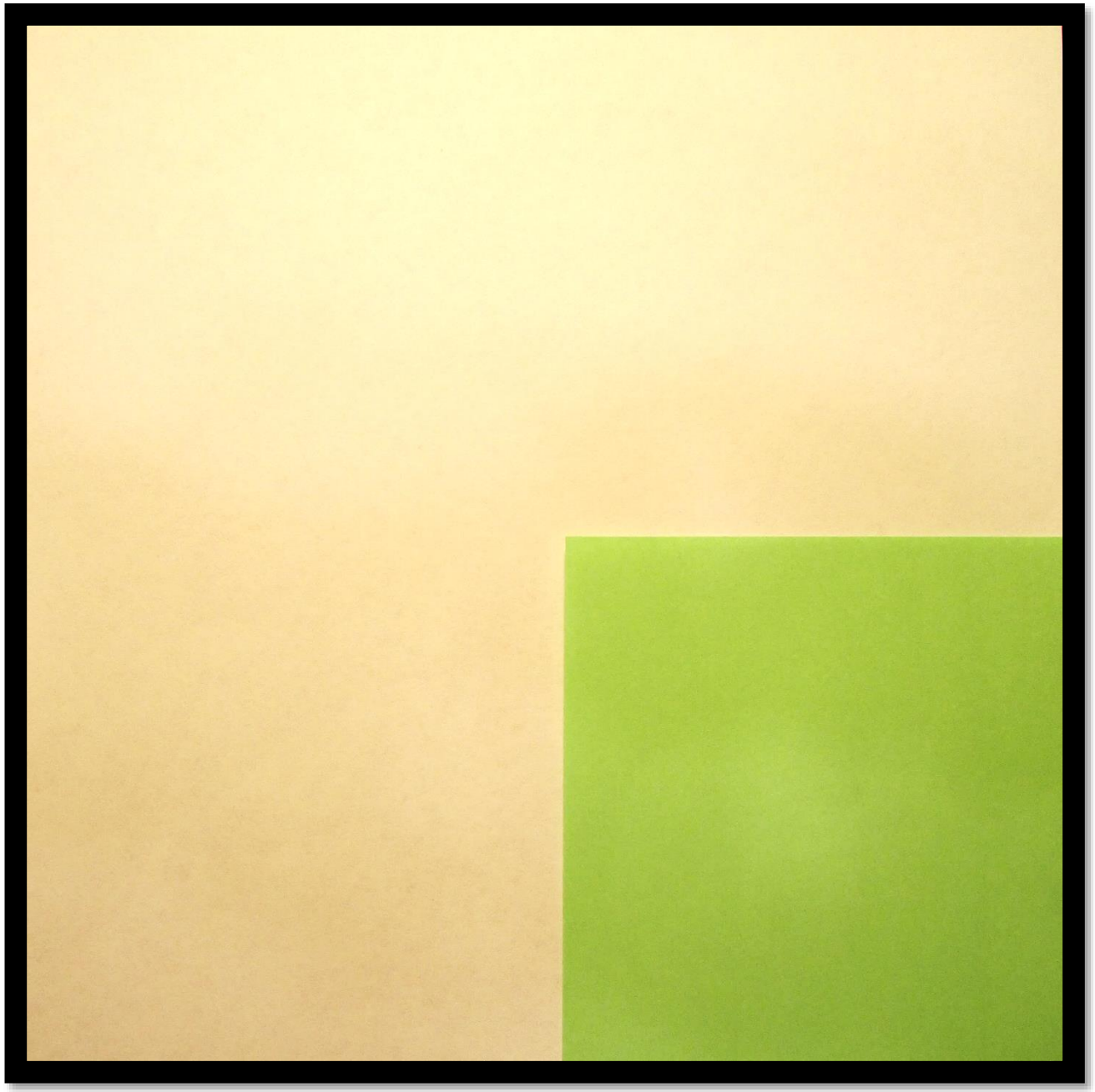
Foliage can hide bare ground. Same patch of sericea before / after cutting.

While learning to estimate bare ground, some people may benefit by looking along a straight line in a representative area.

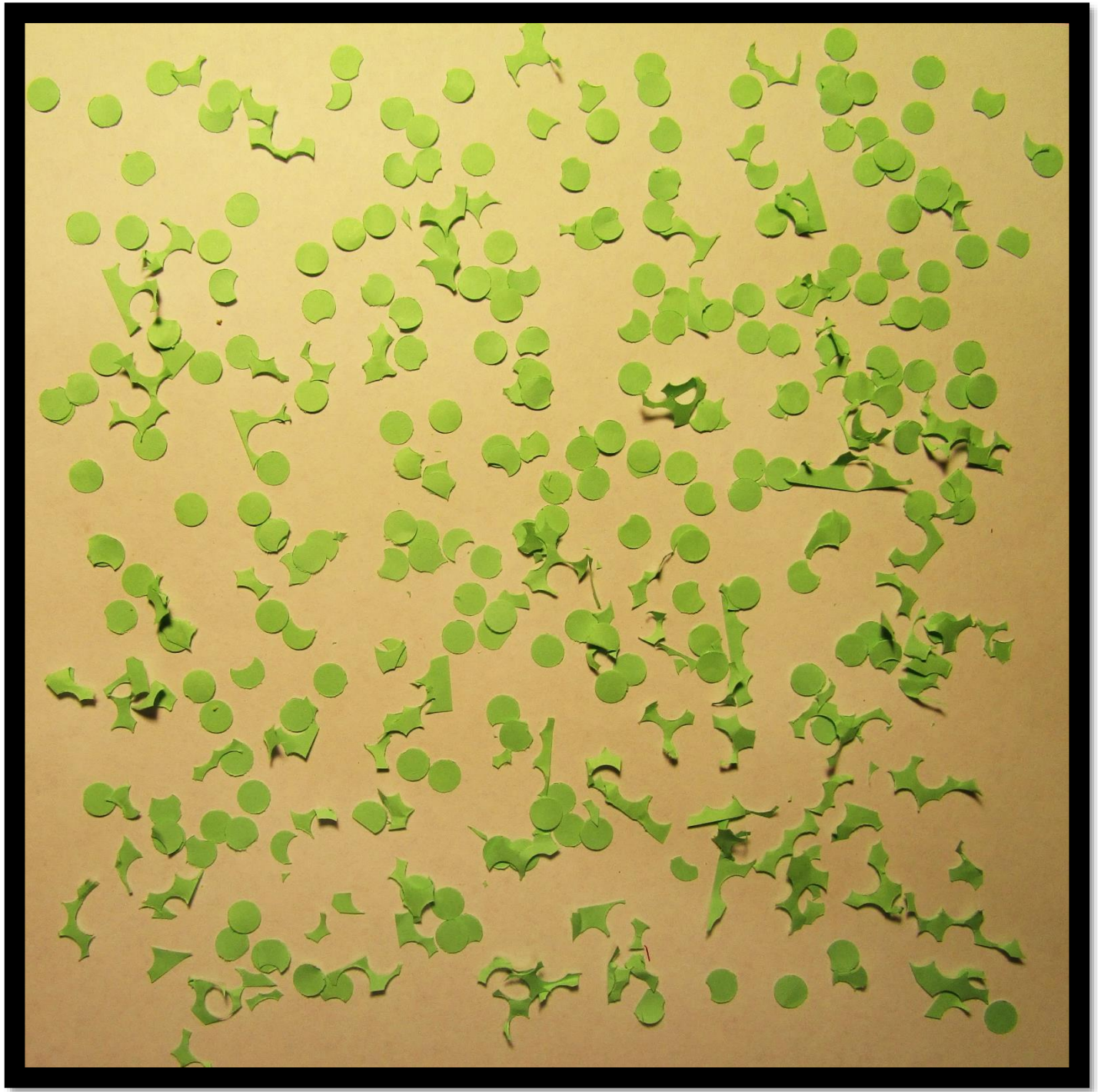
Estimating % bare ground requires “calibrating” your eyes!



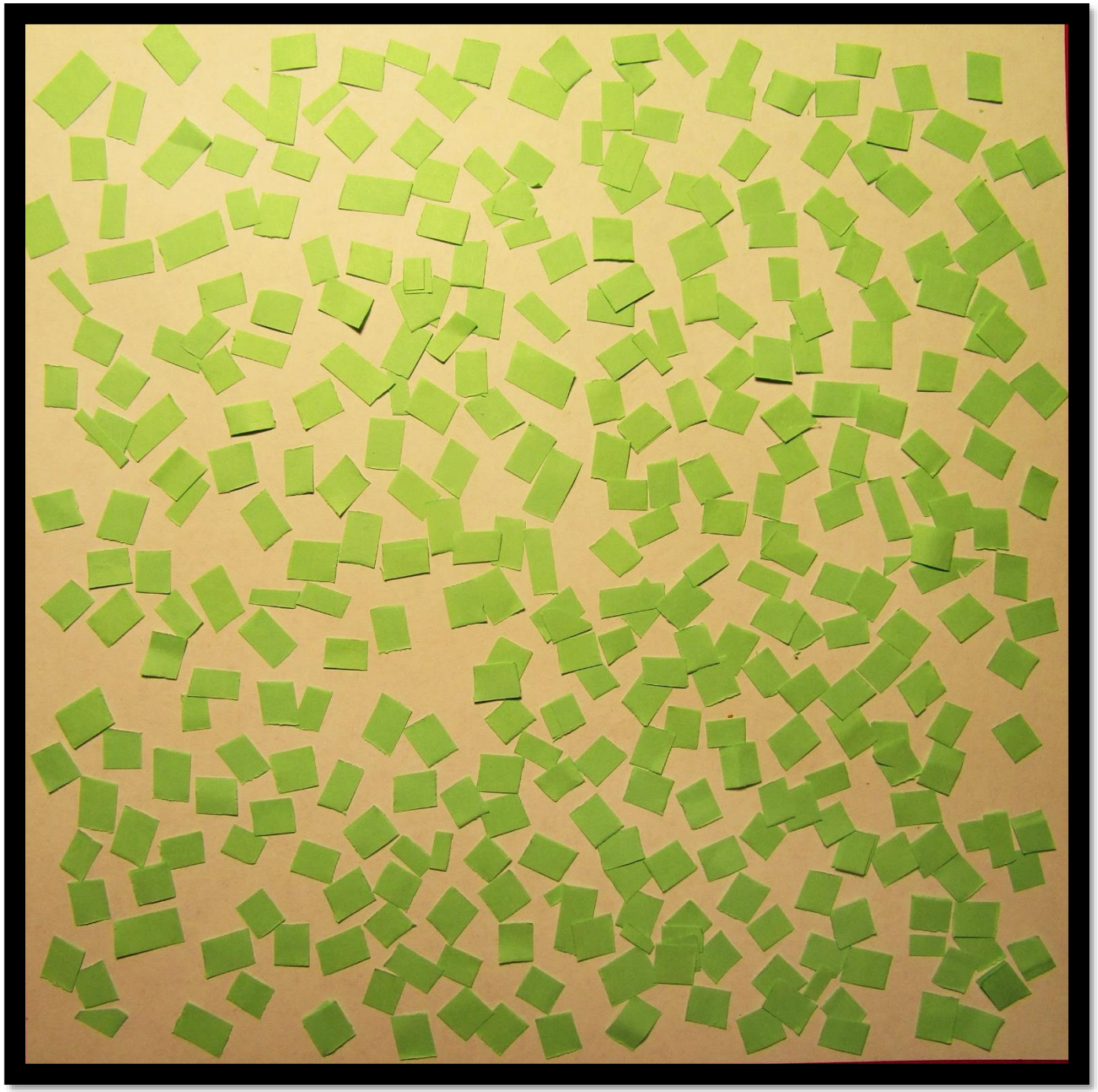
75% white “bare ground”



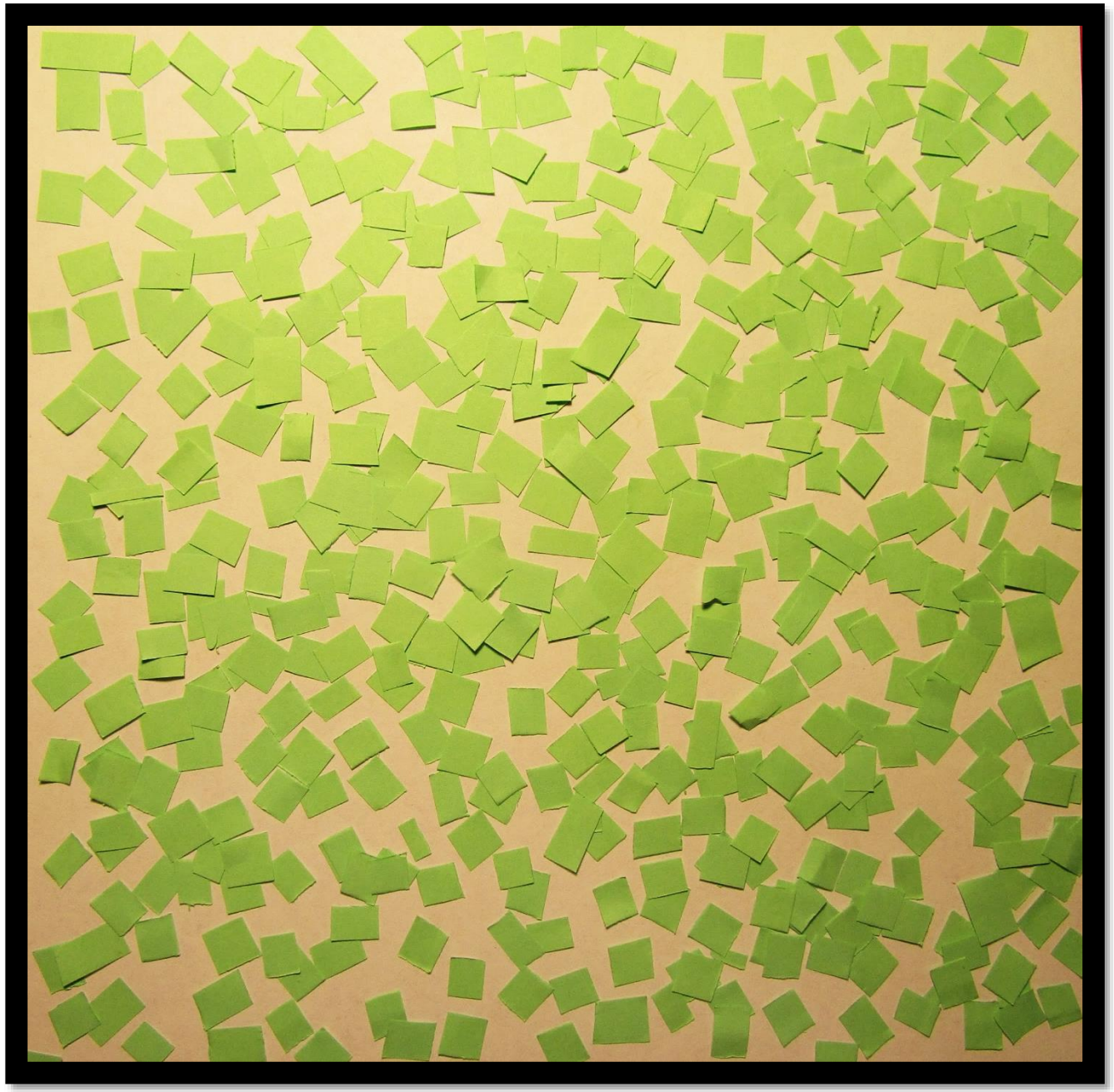
About 75% white



About 50%



≥ 25% white



Protective cover characteristics

- Vegetation providing year round overhead protection
- Protects quail from view of predators and
- Temperature extremes

- Growth pattern with stem density concentrated near ground
- Stems dense on sides and top
- Open underneath so quail can travel through

https://www.youtube.com/watch?v=Ci9p0RaF9g4
TAMU Extension Quail Houses

Protective cover is thick on top and sides, but open enough to allow movement inside

Protective cover, differs by regions (photo credits: TPWD, MDOC, K.Cecil)

Generally woody species, sometimes herbaceous

Plum thicket interior close-up

(photo credit: Marc Puckett VDIGF)

Common plants seen in Virginia “protective cover: #1 = blackberry, (often with greenbrier)
also; low bush blueberry, indigo bush, viburnums, young tree species like dogwoods in “slashes”, honeysuckle often present

Branching patterns and stem density

Branching pattern 1. Branches grow up and out. Umbrella-like. Density near ground low. Examples: Sumac, mesquite

*However! This type, if in a tight cluster, or associated with other woody stems and/or vines (e.g., Japanese honeysuckle, grape, virgina creeper, etc) could form protective cover

Branching patterns and stem density

Branching pattern 2. Branches spread out, but remain close to ground. Density near ground **can be high**. Examples: some dogwoods, multi-flora rose.

However! Older plants can lose lower stems, and become like branching pattern #1.

Branching patterns and stem density

Branching pattern 3. Lots of individual vertical stems. Density near ground **is high**. Examples: blackberries, rasberry.

This stem growth pattern is why some "semi-woody" forbs can be considered "protective cover" Examples: river cane, goldenrod, sunflowers? Giant ragweed? Lespedeza?

Practice differentiating trees (>12 ft) vs. shrubs (<12 ft)

Judging whether shrubs are protective cover can be difficult sometimes.

- This sumac is associated with honeysuckle vine and a little bit of blackberry inside it. If the patch is big enough, it might be considered protective cover. Whether the area gets snowfall or not also affects the decision.

Unusually tight thicket of persimmon & spicebush, but is it at least 314 sq ft?

Sometimes it is easier to identify

- Thick blackberry associated with persimmons and spicebush. Note that it needs to be open underneath for quail can use it.

Sometimes, protective cover is obvious!

Blackberry thicket in an open field.

Protective cover can come in different forms.

- Deadfalls associated with various vines, multiflora rose, and other woody species could be part of a protective cover patch.

Distance makes it hard to judge things. Get close.

What appears from 100 yds to be a shrub patch, turns out to be mostly trees with some shrubs on the edges and in the understory that will be protective cover.

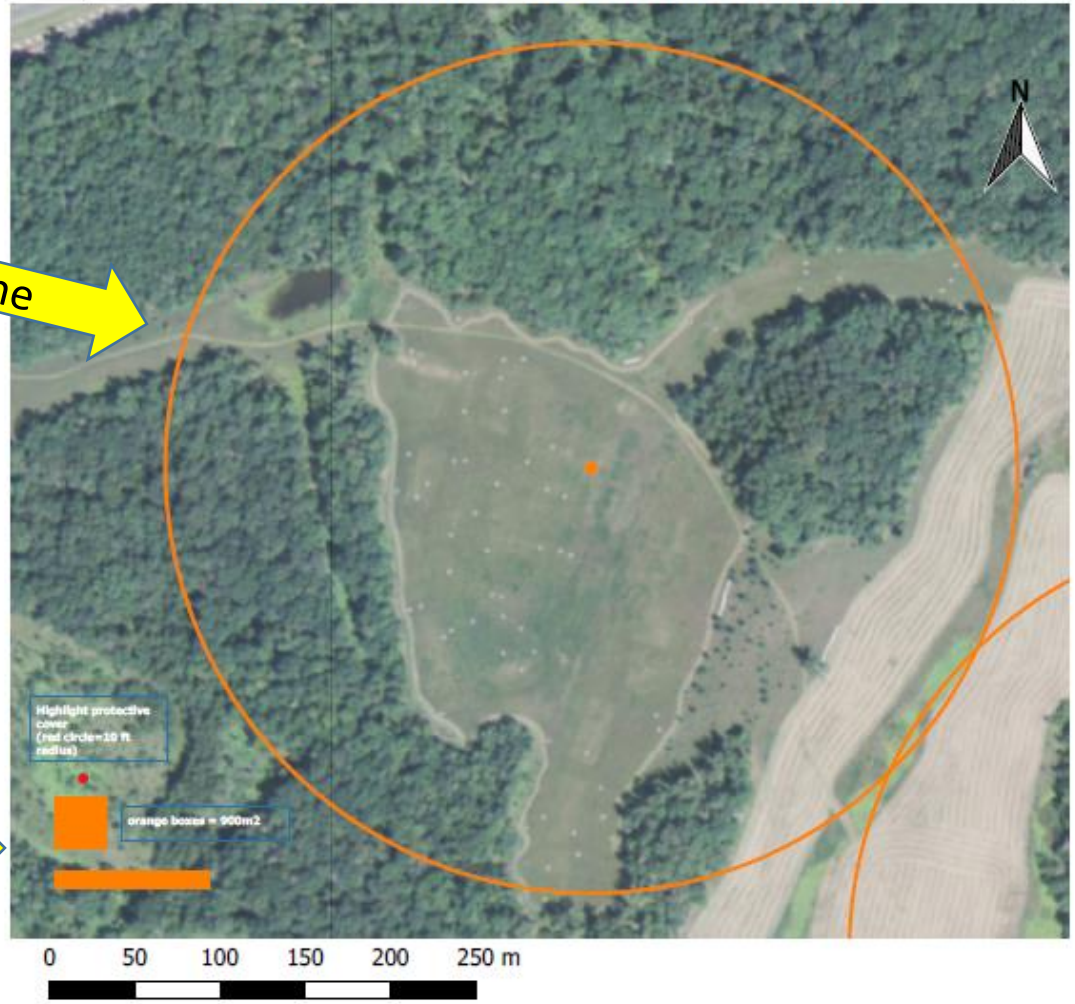
Habitat survey protocol:
Let’s review what we need first!

Data sheet 1. Field Map (example below, style may vary)

250m buffer outline

Who prepares?
Focal area coordinator or GIS support.
Tip: Print 3 copies per point.

Patch size references



Observer _____
Date _____
Comments:

"DO" reminders

DO's
***When in doubt, map it out!**
-use the boxes as a guide

***For PROTECTIVE COVER of at least 10 ft radius (314 sq ft):**
-use the circle as a guide
- mark with highlighter
-label: H=herbaceous,W=woody
***Map all patches of REGULAR COVER at least 900m2**
-(even if touching the circle, and extending out)
- if the patch extends outside circle, map it to edge of frame
***Map developed areas: roads ditch to ditch,**
routinely mowed areas
***Areas with same vegetation, but differ in % BARE GROUND are mapped as different patches**
***hay ground is not a "crop"**

"threshold" reminders

THRESHOLDS:
- Woody plant 12 ft or greater = TREE, <12ft = SHRUB
- 10% or greater tree canopy closure is FOREST
- open cover with at least 33% grass AND 33% forbs is "MIXED HERBACEOUS"

You also need Data sheet 2.
"Observer Data sheet"
"Patch" data sheet, download at
https://www.quailcount.org/monitoring/habitat.html
Tip: you will need 2-3 per point.
And, of course you need "the Manual"

Point ID:	Date:	Observer:	NBCI CIP Habitat Monitoring Datasheet

Patch Number:												
Is this developed land or non-habitat?												
Crop fields												
Crop Type												
What % of field has standing crop residue in spring?												
Perrenial Cover												
What is the % canopy of vegetation > 12ft. tall?												
Sum = 100% of canopy	What % of the canopy are deciduous trees?											
	What % of the canopy are coniferous trees?											
What is the % of shrub cover in the understory?												
What % of the shrub cover has high stems densities near the ground?												
What is the % grass cover in the understory?												
What is the % forb cover in the understory?												
What % of the forb cover can act as protective cover?												
How many forb species are present?												
What is the % bareground including underneath vegetation?												
Is the herbaceous vegetation height > 8 in for ≥ 50% of the year?												
Do you think this patch is quail habitat?												

NOTES:

“Simplified” Work Flow for habitat survey:

In office
Step 1

- Prepare data sheet 1 “Field Map” and data sheet 2 “Observer (patch) data”
- Study the aerial photo to predict the patches and plan your field work

In field
Step 2

- First, do a complete walk-around inside the 250m radius (48 acres)
- When you are confident you can identify most of the patches; Identify, outline with sharpies, and number the different habitat patches
  - Patch boundaries can be drawn with GPS/cell phone app at this time as well
- For every patch, record the required data on data sheet 2

In office
Step 3

- Field staff work with GIS support to digitize habitat patches (polygons) in GIS, State Quail Coordinators enter data in NBCI database.

Field Gear List	required	recommended
Habitat training manual	yes	
Data sheet 1 (field map) 3 copies per point, clipboard	yes	
Data sheet 2 (Observer “patch” data) 3 copies per point	yes	
Sharpies (black fine point for outlining regular patches, purple/pink fine point or highlighter for “protective cover”) and pencils	yes	
GPS with monitoring points loaded (or cell phone app)	yes	
Brush pants, water, insect repellant, sunscreen, garden shears		yes
Forb list worksheet		yes
6 ft measuring pole, marks at every 10 inches optional		yes
Camera		yes

NBCI Habitat Survey, Forb Species Worksheet

This worksheet is not required by NBCI protocol, it just to assist in keeping track.

Instructions: Use this sheet to help, when recording observer data for "# Forb species present" at a patch. **Make a tally mark for every different species observed, and sum the total for the patch.** Forbs are herbaceous plants (wildflowers, "weeds") other than grasses, sedges, rushes.

Plant family	Patch # _____, total _____	Patch # _____, total _____	Patch # _____, total _____	Patch # _____, total _____
Composites, (Asters)	𝍸			
Pea family Legumes	𝍷			
Carrot family	𝍷			
Mustard family	𝍷			
Mint family	𝍷			
Buttercup family				
Lily family				
Nightshades (Solanaceae)	𝍷			
Smartweeds (Polygonaceae)				
Others / unknowns				

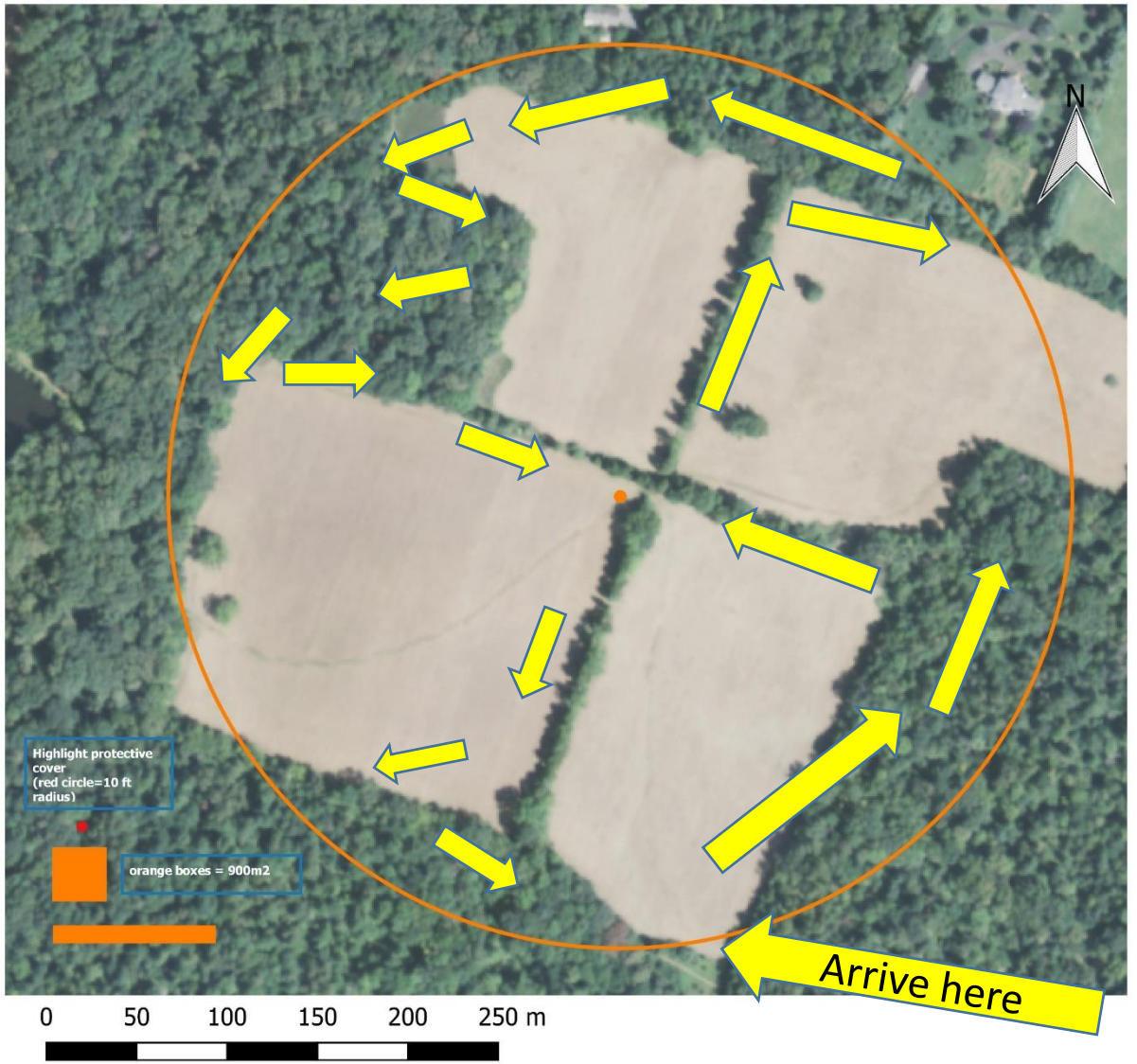
NOT AN NBCI REQUIRED FORM!

To the field! Let’s survey a point!

Step 1: Prepare, study, plan!

During walk-around (*not recording data*), make mental notes on: tentative patch boundaries, possible protective cover locations, % bare ground, # forb species, etc.

Training Data sheet 1. Manassas Battlefield NBCI Monitoring Point 12
coordinates: 38. XXXXXXXX, -77.XXXXXXXX scale 1:3200



Observer _____
Date _____
Comments:

DO's
***When in doubt, map it out!**
-use the boxes as a guide

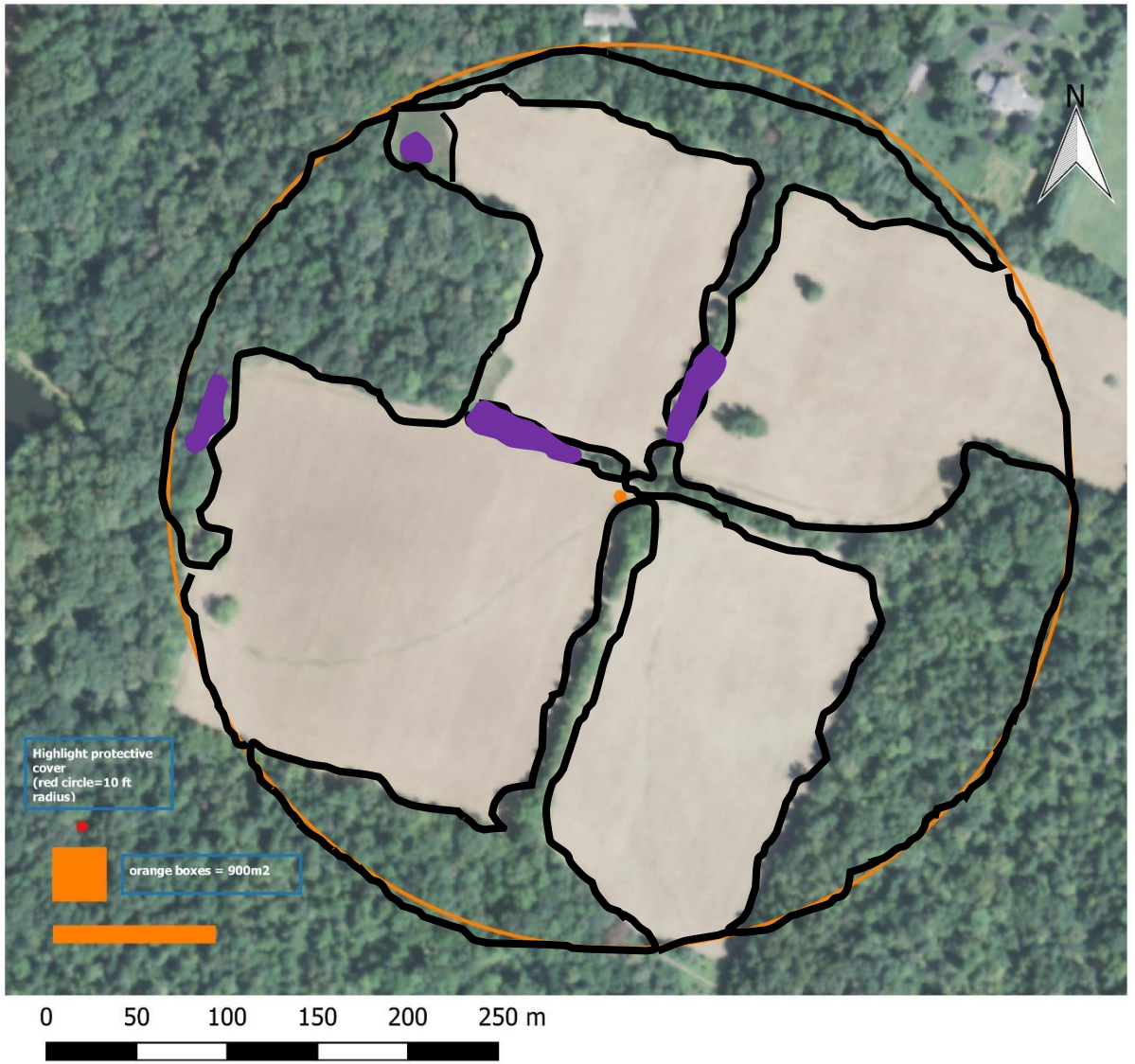
***Highlight protective cover at least 10 ft radius**
-use the circle as a guide
***Mark protective cover with a highligter**
-label H=herbaceous, W=woody
***Map all patches of regular cover at least 900m2**
-(even if touching the circle, and extending out)
- if the patch extends outside circle, map it to edge of frame
***Map developed areas: roads ditch to ditch,**
routinely mowed areas
***Areas with same vegetation, but differ in % bare ground are mapped as different patches**
***hay ground is not a "crop"**

THRESHOLDS:
- Woody plant 12 ft or greater = tree, <12ft = shrub
- 10% tree canopy closure is forest
- open cover with at least 33% grass AND 33% forbs is "mixed herbaceous"

Step 2:

Complete walk-around, identify patches / outline / number patches, at the same time recording data (data sheet 2).

Training Data sheet 1. Manassas Battlefield NBCI Monitoring Point 12
coordinates: 38. XXXXXXXX, -77.XXXXXXXX scale 1:3200



Observer _____
Date _____
Comments:

DO's
***When in doubt, map it out!**
-use the boxes as a guide

***Highlight protective cover at least 10 ft radius**
-use the circle as a guide
***Mark protective cover with a highligter**
-label H=herbaceous, W=woody
***Map all patches of regular cover at least 900m2**
-(even if touching the circle, and extending out)
- if the patch extends outside circle, map it to edge of frame
***Map developed areas: roads ditch to ditch,**
routinely mowed areas
***Areas with same vegetation, but differ in % bare ground are mapped as different patches**
***hay ground is not a "crop"**

THRESHOLDS:
- Woody plant 12 ft or greater = tree, <12ft = shrub
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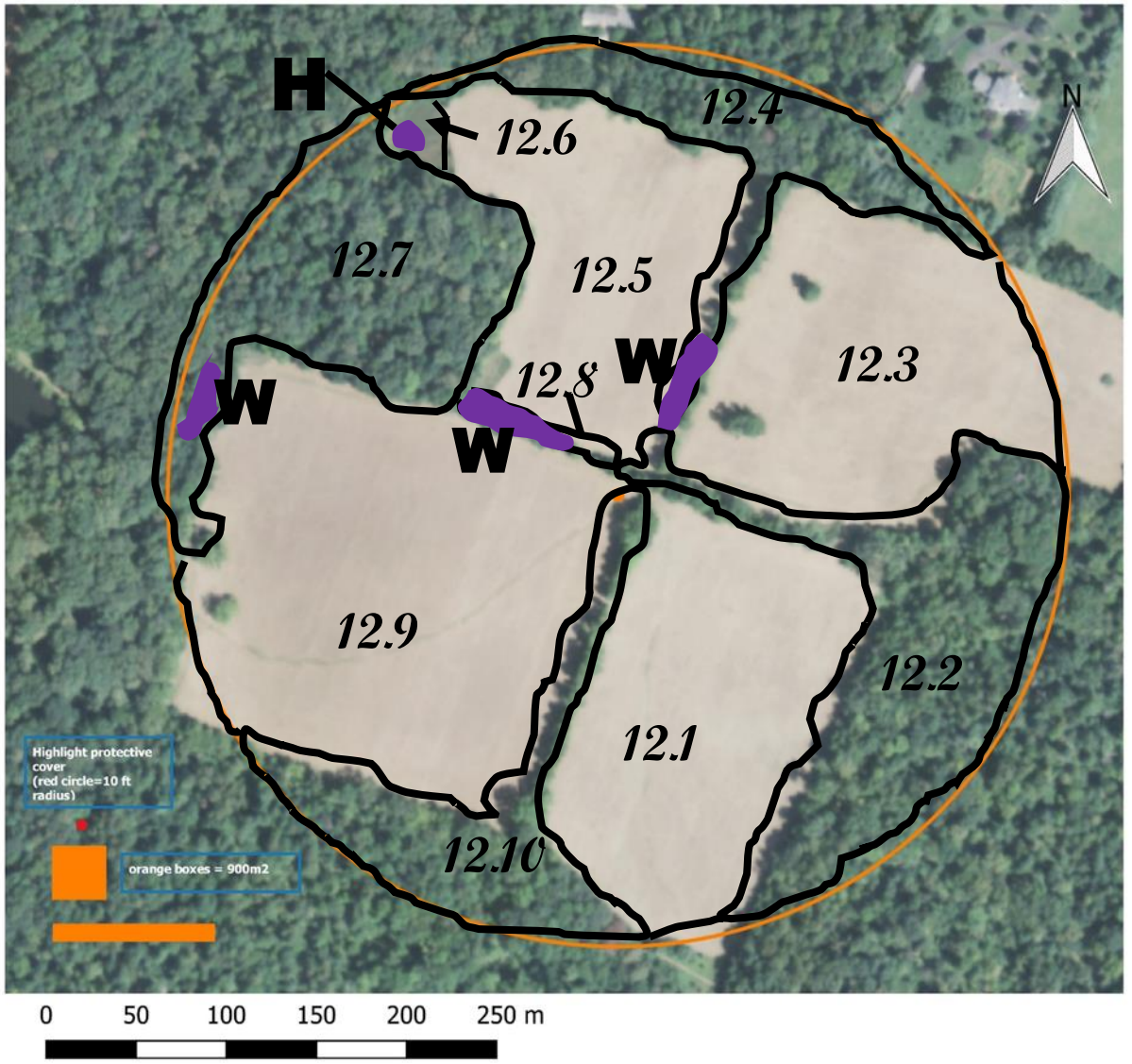
Step 2 (cont'):

Complete walk-around, identify patches / outline / number patches, at the same time recording data (data sheet 2).

Training Data sheet 1. Manassas Battlefield NBCI Monitoring Point 12
coordinates: 38. XXXXXXXX, -77.XXXXXXXX scale 1:3200



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- Woody plant 12 ft or greater = tree, <12ft = shrub
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Identifying “patches”

- **Patches** are areas that:
  - Differ in % bare ground (even if vegetation is the same!)
  - Differ in “cover” type (regular vs. protective, grass, forbs, shrubs, trees, or crop)
  - Differ in cover “composition”
  - Are “non-habitat” (developed land, roads, buildings, ponds/lakes)

- Different minimum mapping thresholds for:
  - **Regular cover** = not protective (minimum size is 900 m^2)
  - **Protective cover** (minimum size is 314 ft^2 or a 10 ft radius circle, or 10 ft x 31 ft rectangle) will be highlighted, but not numbered as unique patch

  - Areas smaller than thresholds are just part of an adjacent patch.

NBCI CIP Habitat Monitoring Observer Datasheet

Point ID	Date	Observer

	Patch number	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	12.10	
	Is this developed land or non-habitat?	N	N	N	N	N	N	N	N	N	N	
Crop fields												
	Crop type											
	What % of field has standing crop residue in spring?											
"Perennial" cover												
	What is the % canopy of vegetation > 12 ft tall? (trees)											
Sum Equals 100% of canopy	What % of the canopy are deciduous trees?											
	What % of the canopy are coniferous trees?											
	What is the % of shrub cover in the understory?											
	What **% of the shrub cover** has **high stems densities near the ground**?											
	What is the % grass cover in the understory?											
	What is the % forb cover in the understory?											
	What % of the forb cover can act as protective cover?											
	How many forb species are present?											
	What is the **% bare ground**, including underneath vegetation?											
	Is the herbaceous vegetation height **>8 in.** for at least 50% of the year?											
	Do you think this patch is quail habitat?											

Any roads, lawns, buildings, ponds?

What % canopy coverage created by trees

Only one tree canopy layer

% of the area occupied by shrubs

Protective cover

Grass + forbs does NOT have to = 100% (different layers)

Semi-woody forbs that last the winter

Quick species count

different % bare ground = different patches

May need to inquire

Observer's opinion

Assume, for practice, 12.1 is an established fescue pasture

Assume 12.2 has no protective cover

Complete the data sheet for all patches while in the field!

Point ID	Date	Observer	NBCI CIP Habitat Monitoring Observer Datasheet

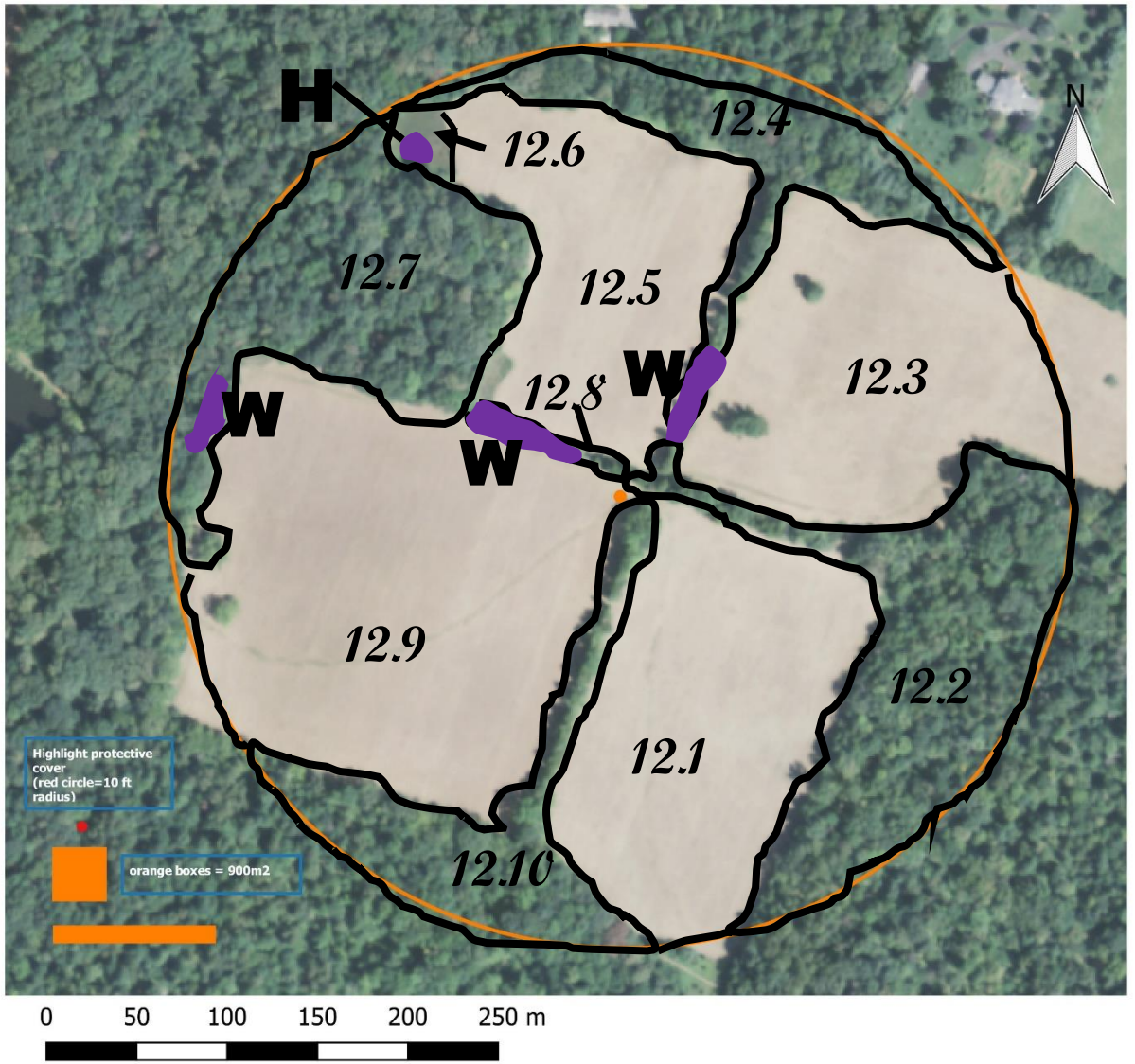
Patch number			**12.1**	**12.2**								
Is this developed land or non-habitat?			**N**	**N**								
Crop fields												
Crop type												
What % of field has standing crop residue in spring?												
"Perennial" cover												
What is the % canopy of vegetation > 12 ft tall? (trees)			**0**	**85**								
Sum Equals 100% of canopy	What % of the canopy are deciduous trees?		**0**	**90**								
	What % of the canopy are coniferous trees?		**0**	**10**								
What is the % of shrub cover in the understory?			**0**	**10**								
What **% of the shrub cover** has **high stems densities near the ground**?			**0**	**0**								
What is the % grass cover in the understory?			**100**	**30**								
What is the % forb cover in the understory?			**5**	**10**								
What % of the forb cover can act as protective cover?			**0**	**0**								
How many forb species are present?			**4**	**6**								
What is the **% bare ground**, including underneath vegetation?			**0**	**25**								
Is the herbaceous vegetation height **>8 in.** for at least 50% of the year?			**Y**	**Y**								
Do you think this patch is quail habitat?			**N**	**N**								

Step 3:
Digitize patches, clean up & correct polygons in GIS, enter data in NBCI database

Protective cover patches will be put into GIS after the field work.

*remember, to be quail habitat, must be within 50 m of protective cover.

Training Data sheet 1. Manassas Battlefield NBCI Monitoring Point 12
coordinates: 38. XXXXXXXX, -77.XXXXXXXX scale 1:3200



Observer _____
Date _____
Comments:

DO's
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***Map developed areas: roads ditch to ditch,**
routinely mowed areas
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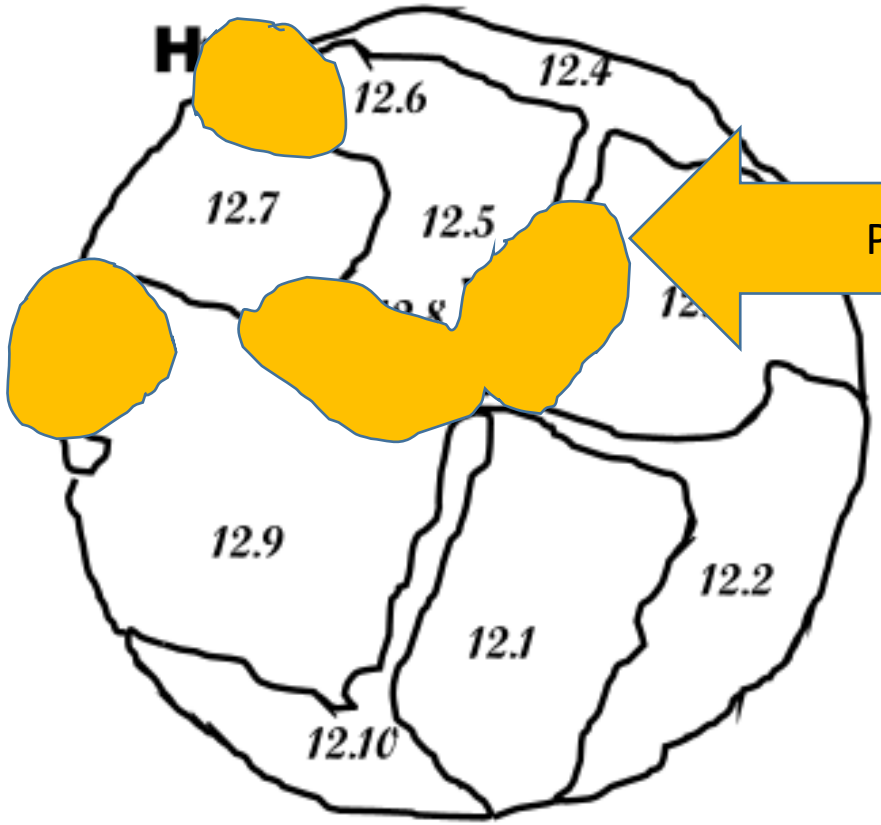
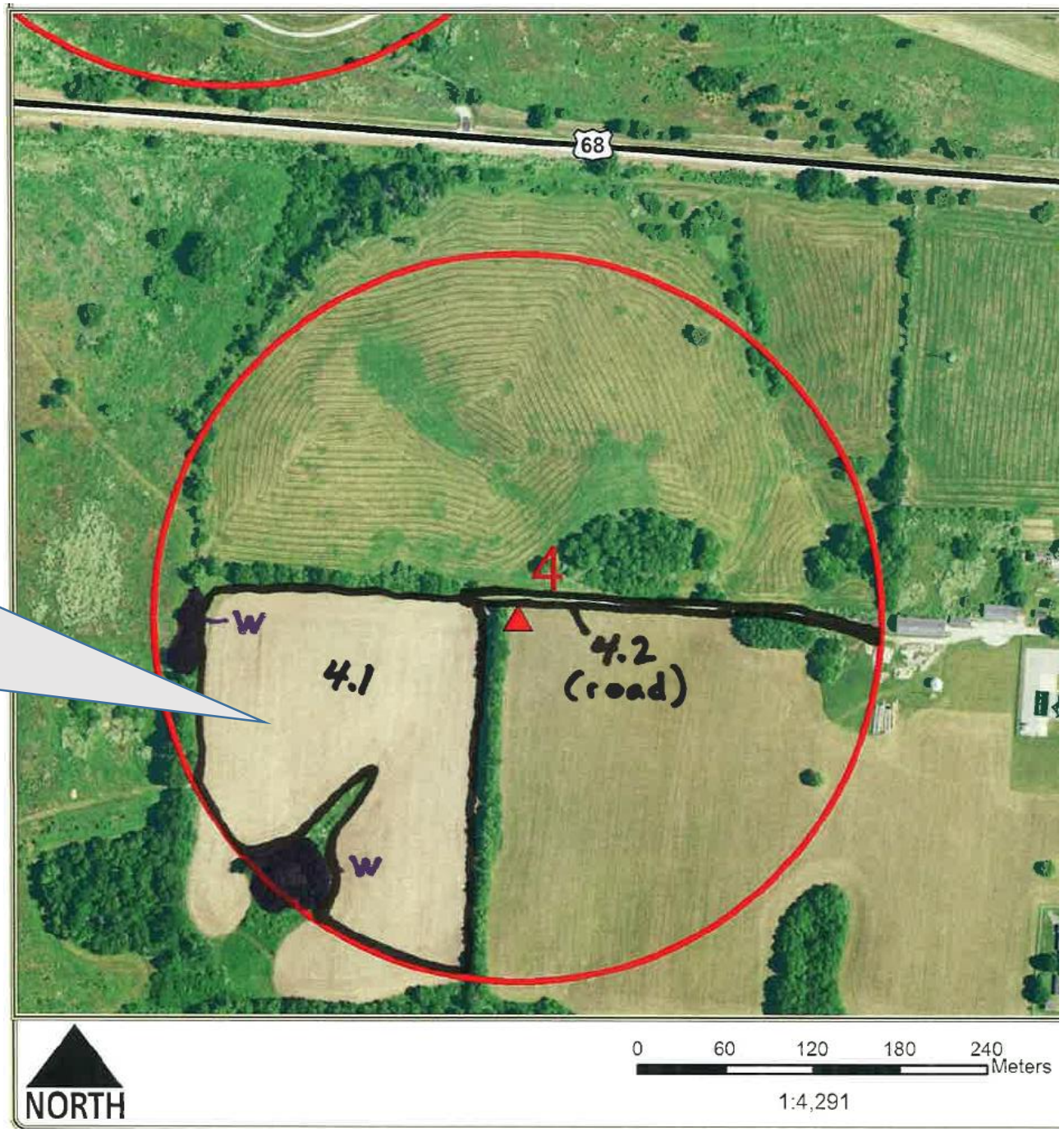


Possible quail habitat

Example scenario: crop field (soybeans, not plowed)



Point ID	Date	Observer		
Patch number			**4.1**	**4.2**
Is this developed land or non-habitat?			**N**	**Y**

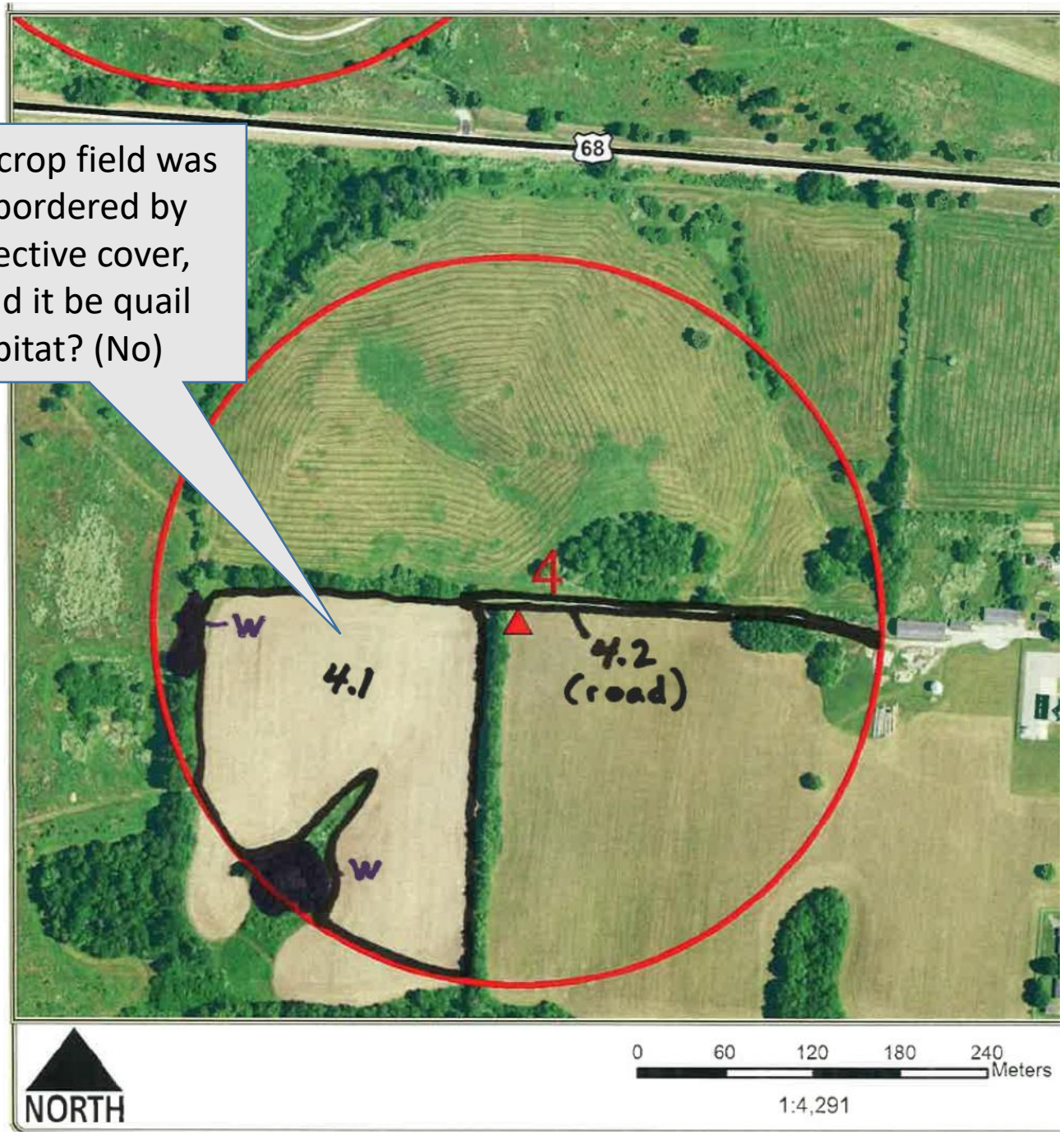
Crop fields

Crop type			**soy bean**	
What % of field has standing crop residue in spring?			**100**	

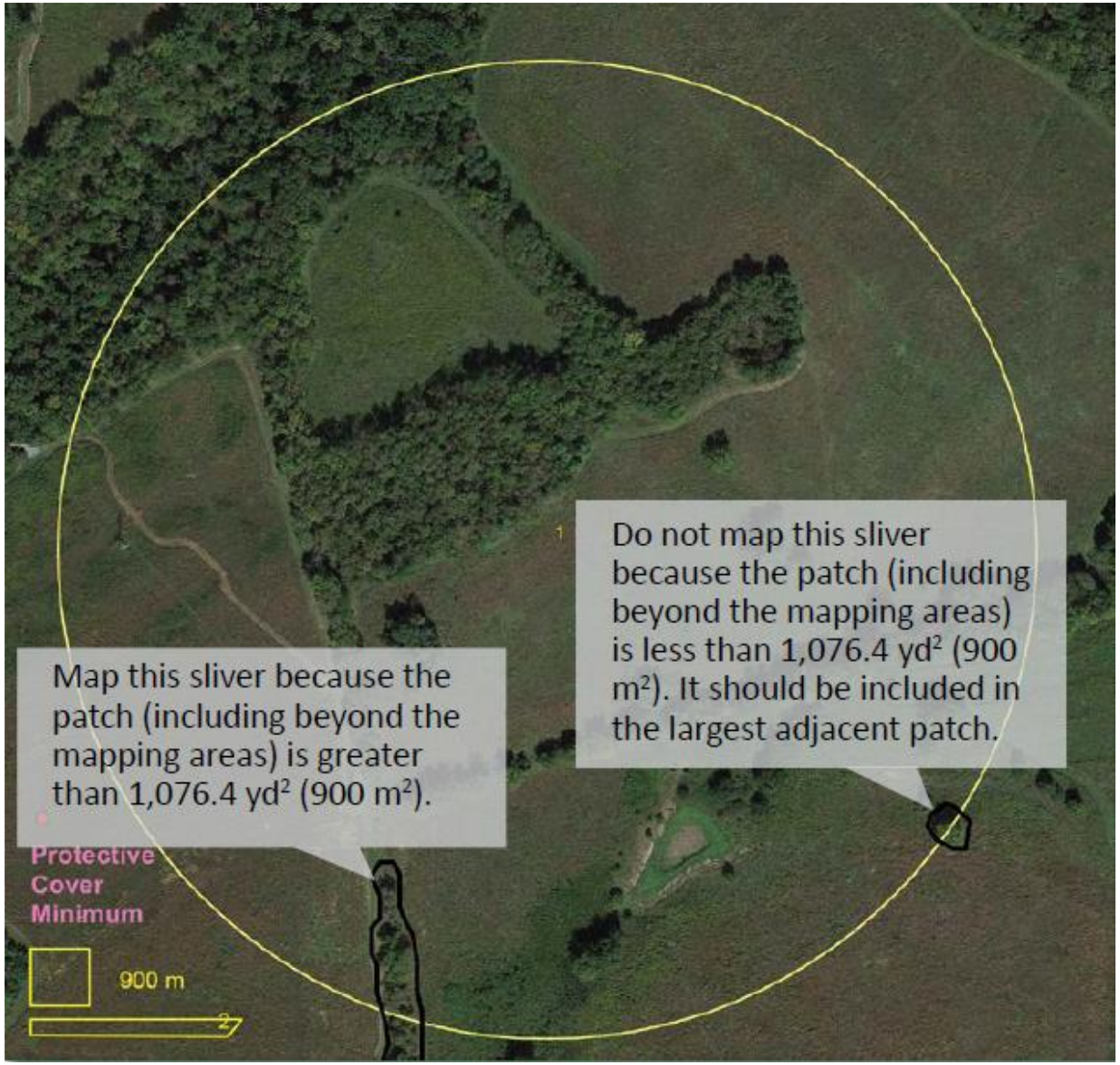
"Perennial" cover

What is the % canopy of vegetation > 12 ft tall? (trees)			
Sum Equals 100% of canopy	What % of the canopy are deciduous trees?		
	What % of the canopy are coniferous trees?		
What is the % of shrub cover in the understory?			
What **% of the shrub cover** has **high stems densities near the ground**?			
What is the % grass cover in the understory?			
What is the % forb cover in the understory?			
What % of the forb cover can act as protective cover?			
How many forb species are present?			
What is the **% bare ground**, including underneath vegetation?			
Is the herbaceous vegetation height **>8 in.** for at least 50% of the year?			
Do you think this patch is quail habitat?		**Y**	**NA**

If this crop field was not bordered by protective cover, would it be quail habitat? (No)

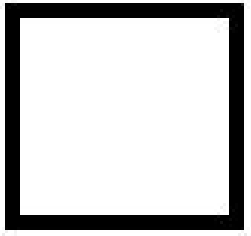


Tricky situation: Patches that extend beyond the 250 m circle.



*note that if this sliver was *protective cover* it **would** be mapped if at least 314 sq ft!

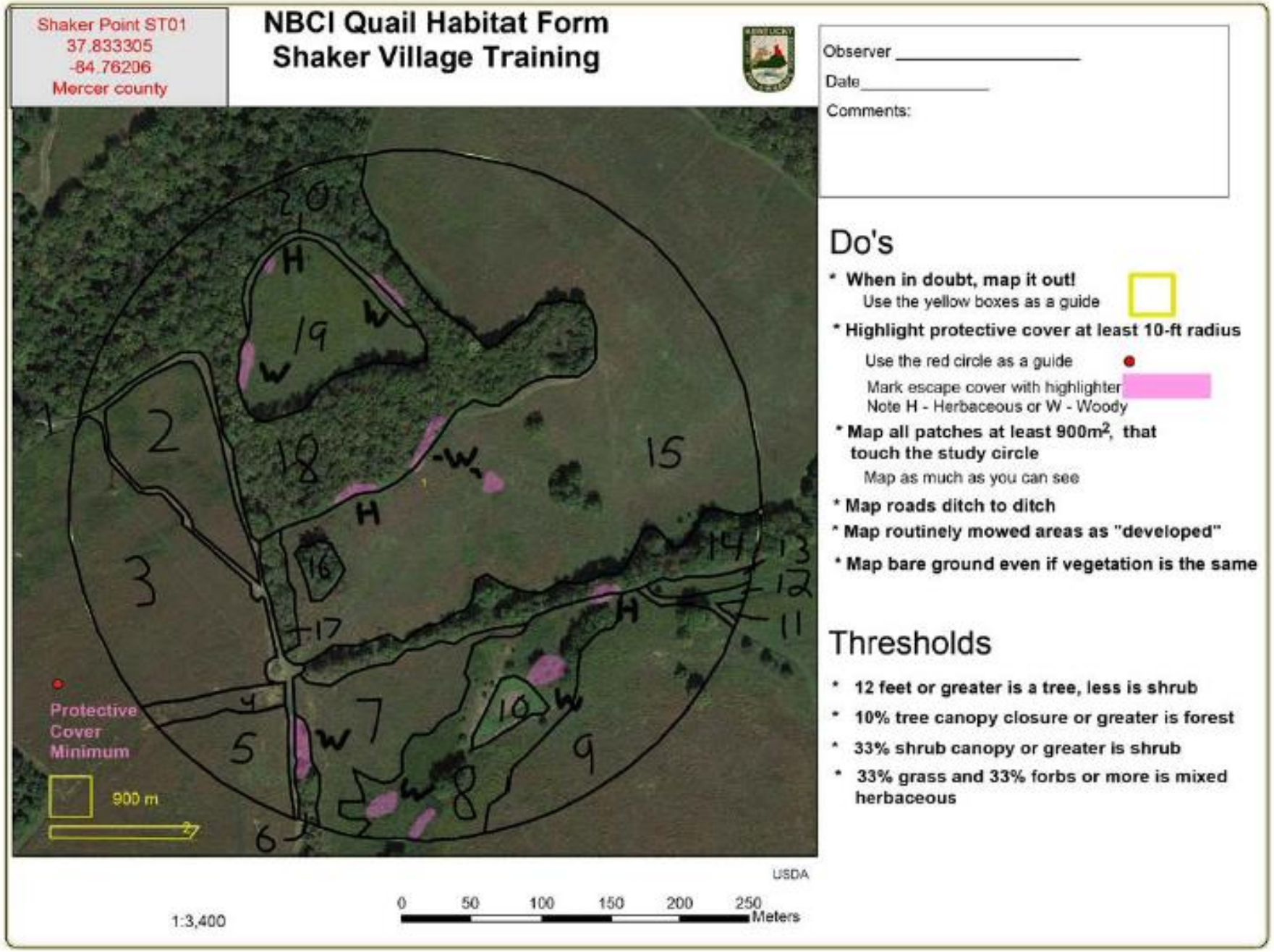
Don't map this sliver, because the patch (including beyond the mapping area) is not greater than 900m2. Absorb sliver in largest adjacent patch.



= 900 m2

Map this sliver, because the size of whole patch (including beyond the mapping area) is greater than 900 m2.

Completed field map for a complex point



Field Tips

- Before going to record data, practice using the gps/phone, estimating patch size, tree height
- Do the easy monitoring points and easy patches first
- When estimating % bare ground, % canopy, etc., with a trained crew, not a bad idea to take the average of all their estimates
- Don’t assume students/seasonal staff know the difference between things like woody, herbaceous, forb, crop, etc.
- Lump developed land into one patch when possible (roads, lawns, etc)
- Don’t think too hard or long about the % bare ground or % canopy estimates. You will quickly get better, faster, more consistent.

Documentation with photos

Photographing habitat protocol in “Manual” page 11.

- Encouraged, not required
- Guidelines emphasize:
  - Consistency
  - Camera settings, etc
  - Naming convention for standardization among partners
    - Meta data keywords listed in Manual

Standardized naming will be important for future database research and analysis

Photo Name: Edge_PA_03_2016_01.jpg
Shot Type: Landscape
Description: Transition from forest to grass field. Four cover types visible forest, shrub, mowed grass and standing grass (left to right).
Photographer: Ken Duren

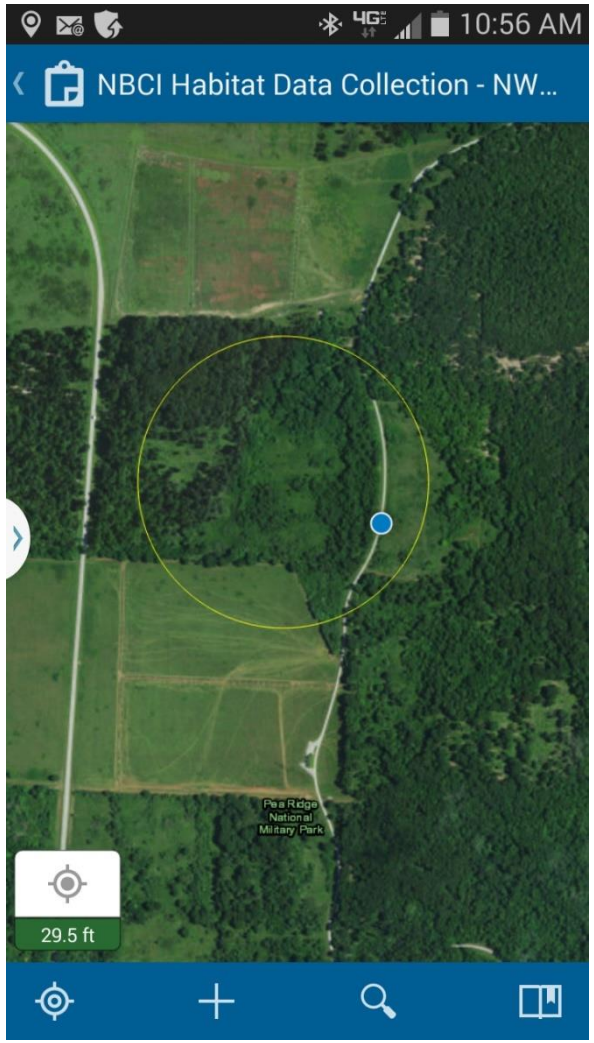
Data collection / recording methods

Data must be collected on paper first

- Data sheet 1 and 2 is required to completed on paper
  - Used to create digitized version in GIS later, backup for files
- Polygon (patch) data can also be collected in field with GPS or a cell phone app, i.e., “Collector”
  - Advantages – field collected polygons are more accurate than working from paper in the office.
  - Could save a lot of GIS editing time
  - GPS/cell app allows you to see where you are in the monitoring area while working! Save time, prevents getting way outside the work area!

GPS / cell phone app “disadvantages”

- Requires equipping / training field staff with devices
- Cell phone app requires GIS support to set up the feature layer, base map for phone download, data entry field pop-up
- Cell phone app works differently on various phones!
  - Can be “quirky”



Map | Details

Area
2.601 acres

NCBI Habitat Data: 94-7

NCBI polygon ID
94-7

Non-habitat, i.e., developed land
No

% canopy coverage of veg is >12ft tall
15

% of canopy with deciduous trees
100

% canopy with coniferous trees
0

% of shrub cover in the understory
10

% of shrub cover with stem density concentrated n...
0

% gramoid cover in the understory
85

% forb cover in the understory
10

% forb cover that can act as protective cover

Strategic Planning / Time Management

- GIS support essential. Setting up Focal Area project in GIS, select random monitoring points, produce “Data sheet 1” field maps.
  - 8-16 hours
- 1 person complete pre-planning and field survey of one point:
  - 3 hours minimum (no photos) – 8 hours complicated points with photos
- Starting in winter and mapping the trees/shrubs and identifying protective cover is not a bad idea.
- Work closely with State Quail Coordinator and NBCI GIS staff for data submittal. Avoid issues by communicating often.

Questions?